THE MEDICAL JOURNAL OF AUSTRALIA

VOL. II.—25TH YEAR. SYDNEY, SATURDAY, OCTOBER 8, 1938. No. 15.

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THE SYMPTOMATOLOGY AND TREATMENT OF THE BITES OF AUSTRALIAN SNAKES.[1]

By C. H. KELLAWAY.

(From The Walter and Eliza Hall Institute of Research in Pathology and Medicine, Melbourne.)

IN cases of bites by the common Australian snakes it is difficult, if not impossible, to determine the species of snake causing the bite from the symptoms presented by the patient. Several factors operate in bringing about this state of affairs. The symptoms which follow the bites of all the common Australian species bear a close general similarity. There is much variation in the picture presented after the bite of any single species; this is dependent partly upon the site and nature of the bite and partly upon the dose of venom injected. Finally, there are far too few carefully observed and accurately recorded cases of snake bite in Australian medical literature to afford really accurate definition of the symptomatology of the bite of each species.

Before discussion of the symptomatology of snake bite it is well to recall the pharmacological actions of the Australian snake venoms. Their dominant action is neurotoxic; but it is still not clear how much of this is central and how much peripheral. The nausea and vomiting which occur when the venom first gains entry to the circulation and the faintness and drowsiness which may shortly ensue are possibly all central effects. The venoms have strong peripheral effects, both sensory and motor.

[1] Delivered on June 3, 1938, at Brisbane, under the auspices of the Queensland Post-Graduate Committee.

They have a paralysing action upon sensory and proprioceptive as well as upon motor nerve endings. Blunting of sensation and incoordination of movement may be peripheral effects. Paralysis of skeletal muscle is rarely complete, and the paresis which occurs is probably peripheral, for the venoms have a curari-like action on motor endings and a further direct action upon muscle itself. To this curari-like action the phrenic end plates in the diaphragm are particularly sensitive; and partial curarization of the diaphragm plays an important part in the failure of respiration, which is the commonest cause of death after the bites of these snakes. Motor paralytic effects, which are conveniently grouped under the head of ocular and bulbar effects, are common in the late stages of fatal snake bite, though no convincing evidence has been put forward that they are central. Such symptoms include bilateral ptosis, paralysis of the ciliary muscles with fixed dilated pupils, paralysis of the soft palate, and paresis of the tongue with difficulty of speech and swallowing. In animals poisoned with neurotoxic venoms "starting movements" are observed in the late stages of poisoning. These convulsive movements are probably central, and may be caused by low-grade asphyxia or directly by the action of the venom.

The extent to which this neurotoxic action is developed determines the toxicity of the Australian venoms. The venom of the tiger snake (*Notechis scutatus*), of the death adder (*Acanthophis antarcticus*), of the copperhead (*Denisonia superba*) and of the common brown snake (*Demansia textilis*) are all powerfully neurotoxic; but the venom of the black snake (*Pseudechis porphyriacus*) is only feebly so. It is for this reason that the bite of this last-mentioned snake is rarely if ever fatal. Of the rarer species, the venom of the taipan (*Oxyuranus scutellatus*) is powerfully neurotoxic; and since it is a large snake with a well-developed venom gland and biting apparatus, its bite is nearly always rapidly fatal. The venoms of the snakes of the genus *Hoplocephalus* are also powerfully neurotoxic.

The second group of actions possessed by the Australian snake venoms is linked up with their hæmolytic and cytolytic power. It leads, as Feldberg, Trethewie and I have shown, to the liberation of histamine from injured cells. We believe that the formation of lysocithin-like substances from the lipins of the cells is an intermediate step in the liberation of histamine, and that the histamine set free acts locally where it is liberated. It gives rise to those symptoms of cardio-vascular failure which follow the bites of the common Australian snakes. The most potent of the Australian venoms from this point of view are those of the black snake (*Pseudechis porphyriacus*) and the copperhead (*Denisonia superba*); but all the other common venoms possess this activity, though in lesser degree.

The third action of these venoms is coagulant, and depends, as Eagles has shown (at least for tiger snake venom), upon the conversion of prothrombin to thrombin. The venoms of the death adder and copperhead lack this property, which is strongly developed in the venom of the tiger snake (*Notechis scutatus*), the brown snake (*Demansia textilis*) and the black snake (*Pseudechis porphyriacus*), and is present also in the venom of the taipan (*Oxyuranus scutellatus*).

When these coagulant venoms gain entry to the circulation they cause coagulation in the vessels. If the dose entering is small it may cause only the formation of a small amount of *ante mortem* clot in the right auricle and ventricle; but with large doses intravascular clotting takes place in the portal and mesenteric veins and inferior *vena cava*. Under these conditions death may take place in three or four minutes, with convulsive seizures and failure of respiration. Entry of venom directly into the circulation following the bite of most Australian snakes must be very rare. Their fangs are short, and only by an unlucky mischance does the venom of the tiger snake or black snake find its way directly into a vein or other vascular space. In the cases of bites by the brown snake, intravascular coagulation may occur without the entry of venom directly into a vessel during a bite. Unlike the coagulant principle in the other common venoms, that of the brown snake is rapidly diffusible, and even when injected subcutaneously may gain entry into the vascular system in sufficient amount to cause intravascular coagulation. This fact, as will be seen, accounts for the extreme variability of the symptoms presented after bites by this snake.

The most important factor in determining variability in the onset and course of symptoms after the bite of a snake is the dose of venom which is injected. Dr. N. Hamilton Fairly has discussed fully the conditions which operate in determining this, but it is perhaps worth while for us to recall them here. The distance between the punctures is, as Fairley showed, a useful clinical criterion of the size of the snake responsible for the bite. Naturally, the larger the snake of any given species, the larger its venom glands and the longer its fangs. The nature of the bite is also important. At a "snap bite" less venom is introduced than when the snake holds on, contracting first on one mandible and then on the other. In the case of the Australian snakes, which all possess anteriorly grooved poison fangs, the question as to whether the bite takes place in a naked part or through several layers of clothing is obviously important, because the venom escapes more easily from the upper part of the groove through the loose texture of clothing than into the denser texture of the tissues where the point of the fang is embedded. The previous history of the snake is also significant. If the snake has just previously bitten some other object less venom is available. Still less venom is available as a rule from a third bite. Finally, there is the possibility already mentioned of a chance bite into a vein which may determine the almost immediate onset of symptoms or, if the venom contains a coagulant principle, rapid death from intravascular coagulation.

Symptoms.

In describing the symptoms of snake bite it is convenient to give first a general account and then to indicate the variations observed following the bites of different species.

Symptoms of Onset.

The early symptoms generally occur from fifteen minutes to two hours after the bite, though longer delay may occur if efficient first-aid measures have been applied, or if the dose of venom injected is barely lethal or sublethal. The first symptoms may occur when the ligature is first released and venom enters the blood. These are nausea, vomiting and faintness, rapidly followed by drowsiness. Sometimes the patient complains of pain in the chest or abdomen.

Symptoms due to Cytolytic Action of the Venom with Signs of Peripheral Circulatory Failure.

The patient is prostrated and continues to vomit. The skin is blanched and sweats freely; the extremities are cold; the pulse is rapid and thready; the respirations are frequent and shallow; the blood pressure is lowered.

Symptoms of Neurotoxic Origin.

The gait is incoordinate, the patient walking like a drunken man. Sensation is blunted and drowsiness increases. The pupils are dilated and fail to react to light or accommodation. Bilateral ptosis is present. The tongue is paresed. Speech is slurred and difficult. The soft palate may be paralysed, with nasal speech. Swallowing is difficult; the limbs are weak though not completely paralysed; the respirations become slow and the patient passes into coma. The respirations may become costal in type and finally cease. Death is sometimes preceded by convulsions.

General Features.

Generally albuminuria is present, with blood pigment or blood cells in the urine. In the case of venoms containing a coagulant, sometimes gross hæmorrhage from the stomach or bowel occurs. Hæmoptysis, which is probably of similar origin, has also been described.

Symptoms due to Bite from Different Snakes.

The Tiger Snake.—The venom of the tiger snake contains a coagulant principle which converts prothrombin into thrombin. It is only feebly hæmolytic, but has some cytolytic action, as evidenced by the symptoms of peripheral circulatory failure observed in many cases. Its predominant effects are upon the nervous system, both central and peripheral. The symptoms after a bite from this snake follow the general description given above very closely. A single lethal dose takes about forty-eight hours to induce a fatal result, and death occurs by respiratory failure. The bite may be fatal within a few minutes if the venom in injected directly into a blood vessel or if the bite is by a large snake and a great quantity (100 milligrammes of dry venom) is injected.

The Death Adder.—The venom of the death adder contains no coagulant principle and it is only feebly hæmolytic. It has a strong neurotoxic action which is partly peripheral. It has also some cytolytic action, as is evidenced by petechial hæmorrhages in various organs at death and by the occurrence of symptoms of peripheral circulatory failure. Death is generally caused by failure of respiration. The symptoms follow the general description closely, but gross hæmorrhages from the mucous membranes are not observed.

The Brown Snake.—The symptoms which follow the bite of the brown snake are somewhat variable. This venom is powerfully neurotoxic, and part of this effect is a peripheral curari-like action. It has little hæmolytic power. It has a powerful coagulant action; but the active agent is highly diffusible and death from thrombosis may even follow subcutaneous or intradermal injections in animals. Many of the aberrant symptoms in man are unquestionably caused by thrombosis in various sites which may give rise to the hæmorrhages from the mucous membranes. The severe abdominal pain followed by the passage of bright blood in Dr. Leckie's case, recorded by Dr. N. H. Fairley, was probably caused by mesenteric thrombosis. In Dr. Foxton's case the dominant feature was persistent and severe headache, with repeated convulsive attacks towards the end. Hæmorrhagic lesions in the medulla and pons were found *post mortem*. Dr. Baker's case has not previously been recorded.

A girl, aged thirteen years, was bitten on the naked foot below the metatarsal joint of the great toe. An ineffective ligature was applied and the bitten area was incised. About a quarter of an hour after the bite the patient vomited; within a further half hour she complained of headache and nausea, and vomited forcibly and frequently. She was still vomiting at the end of the first hour after the bite and complaining of severe abdominal pain. This continued, and a few minutes later she was vomiting dark brown fluid and was extremely giddy. Two hours after the bite her pulse rate was 108 beats per minute, her temperature was 36·5° C. (97·6° F.) and her respirations numbered twenty-two per minute. The main symptoms were then giddiness, nausea and vomiting. Early in the fourth hour she had a high bowel wash-out and a profuse evacuation, and she had a second one half an hour later. She complained of extreme thirst. Seven and a half hours after the bite she was restless, with pains in the arms, legs and teeth. At the tenth hour she developed bilateral ptosis, with general signs of bulbar affection, including paralysis of the tongue. The pupils were dilated, but reacted to light and accommodation. The limbs were weak and flaccid, but could still be moved voluntarily. The pulse rate was 128 beats per minute, the respirations numbered 40 per minute, and the temperature was 32·3° C. (99° F.). Fourteen hours after the bite the patient was sleeping, but was slightly cyanosed. There was blood pigment in the urine. At this time the pulse rate was 100 beats per minute, respirations numbered 24 per minute, and the temperature was 36·5° C. (97·6° F.). She exhibited strong overaction of the accessory muscles of respiration with increasing cyanosis, and died seventeen hours after being bitten with symptoms of cardio-vascular failure and without developing complete paralysis of the limbs.

Another feature sometimes met with after bites by brown snakes, and possibly by other species also, is a long period of freedom from symptoms after the first twenty-four hours, with death from respiratory

failure probably due to paralysis of the diaphragm thirty-six or forty-eight hours or more after the bite.

The Copperhead.—I can find no complete account of the effects of the bite of the copperhead in recent Australian literature. Happily the copperhead is rather sluggish in its habit, and people are only rarely bitten.

In the description of this snake in McCoy's "Prodromus" there is a record of a station master who was bitten by a small copperhead, which he took up after some workmen thought they had killed it. He rapidly lost power in the lower extremities, the pupils became dilated, and he was rescued from deep coma by the intravenous injection of ammonia by Professor Halford.

Observations upon animals indicate that the venom is powerfully hæmolytic and cytolytic in its action, but is without any coagulant effect on the blood. It is a strong neurotoxic poison, and even in sublethal doses may cause paralysis lasting for some days with ultimate recovery. Death usually results from failure of respiration. In poisoning by this venom peripheral circulatory failure plays an important part. In cases of bites by this snake hæmoglobinuria or methæmoglobinuria may be expected to be present, on account of the powerful hæmolytic action of the venom. It is not improbable that deaths attributed to the bite of the black snake (*Pseudechis porphyriacus*) may in reality be due to this species, for it is commonly spoken of as a black snake in many parts of Victoria.

The Black Snake.—The venom of the black snake has a coagulant action like that of the tiger snake. It is the most strongly hæmolytic of the common Australian snake venoms; but despite this action and its cytolytic effect in liberating histamine locally, as was recently shown by Trethewie, the bite is unlikely to be fatal to an adult. The venom is only feebly neurotoxic; and though the bite causes severe symptoms of shock with vomiting, and though red blood cells and blood pigments are present in the urine and hæmorrhages may take place from mucous surfaces, the effects on the central and peripheral nervous system are slight and recovery is the almost invariable result. If the victim is so unfortunate as to be bitten directly into a vein, death may occur from intravascular coagulation. Happily the coagulant principle of this venom and that of the tiger snake are not diffusible like that of brown snake venom.

Other Snakes.—Of the symptoms of the bites of the rarer snakes but little is known. The bite of the ornamental snake produces very characteristic effects: paralysis and coma of extremely rapid onset, with an equally abrupt return to normal. The bite of this small snake, which is not uncommon in Queensland, is rarely observed. The only victim within my knowledge rapidly recovered after a period of paralysis and coma.

The most dangerous snake in Australia (*Oxyuranus scutellatus*) occurs in the most northern portion of Queensland and in New Guinea. These reptiles reach a large size; and since their venom is highly neurotoxic and coagulant and their biting apparatus extremely efficient, it is not surprising that the bite is almost invariably fatal. When the snake is a large one death occurs within a very short time.

Treatment.

1. The first step in the treatment of snake bite must be taken immediately. If the bite is in a limb a ligature, tight enough to obstruct the flow of arterial blood, must be placed between the bite and the heart, round a portion of the limb which contains only one bone. A thick piece of soft rubber gas tubing makes an admirable tourniquet and should be put on over the clothes to minimize bruising. The ligature delays the entry of venom into the circulation and affords time for other treatment. In the case of brown snake bites it has an additional advantage. It prevents the entry of the coagulant diffusible principle into the blood stream and allows it to act locally like those of tiger snake and black snake venoms. The ligature may be left in position for at least two hours; but after the first half hour it may be necessary to lift it for half a minute or so and allow a little fresh blood to enter the part the blood supply of which has been cut off. This may be done every succeeding ten minutes. At this stage local venesection (*vide infra*) may with advantage be applied.

2. The surfaces of the bite should be washed with clean fluid; saliva or urine may take the place of water if this is not immediately available.

3. The bite should be excised, or at least cuts should be made, if possible, along the tract of the fangs. Excision is applicable only if the bitten person is seen at once, and is useful only if performed within the first few minutes. Acton and Knowles observed that amputation of the tails of monkeys within six minutes after the injection of venom in the tip was effective in saving life; and Dr. Hamilton Fairley found that immediate excision saved sheep from death after natural bites of the tiger snake, though many lethal doses had been injected. Excision is not likely to be often practised, as it needs great courage to do it upon oneself. It is not devoid of risk in unskilled hands. It should include all the tissues to the depth of the fang puncture, which is about 0·63 centimetre (a quarter of an inch). In regions where a ligature cannot be applied it is the only immediate treatment available, and the flow of blood from the wound will wash away some of the injected venom. This can also be encouraged by suction, either with the mouth or by special suction apparatus if this is at hand in a first-aid outfit. In cases in which excision is performed after application of a ligature, the ligature to be lifted momentarily should be moved after a second ligature has been placed round the limb immediately distal to the first. This second ligature should be tight enough to obstruct the venous return, but not tight enough to obstruct the arterial flow into the distal part of the limb (venous ligature). Bleeding from the wound may be produced repeatedly in this way and the procedure may replace local venesection.

4. Local venesection may be applied at any time up to two hours after the bite, but is more efficient the earlier it is performed. It is not worth doing at all unless immediately after the bite an efficient ligature has been placed round the limb and left *in situ*. The method consists in the application of a "venous ligature" distal to the "arterial ligature", and in allowing bleeding to occur from a cut into a vein which drains the region of the bite. When the arterial ligature is lifted blood flows into the limb, and instead of venous blood going into the general circulation it leaves the body taking venom with it. This procedure of lifting and replacing the ligature may be repeated many times, and in the case of an adult 0·6 litre (one pint) of blood may be allowed to flow.

In experiments in sheep I found that from a quarter to a third of the injected venom could be removed in this way, and that sheep which had received one to one and a half certainly lethal doses of death adder venom, or one to one and a quarter certainly lethal doses of brown snake venom, recovered after this treatment. In the case of children transfusion may be necessary to allow of satisfactory treatment by this method.

5. Only two varieties of antivenene are available, and for our purposes, as Dr. Morgan has pointed out, the monovalent tiger snake antivenene is generally applicable. It is, however, useless against the bites of the brown snake and death adder. Unfortunately attempts to make monovalent death adder antivenene have not been successful. The horses immunized with this venom reach a very high degree of active immunity without at any time having a high titre of antibody in their blood. It is unlikely that enough brown snake venom will be collected to permit of the manufacture of an antivenene.

Monovalent tiger snake antivenene, if of high titre, is moderately effective against several other venoms. An antivenene, 10 cubic centimetres of which neutralizes 3·3 milligrammes of dry tiger snake venom, neutralizes 2·4 milligrammes of black tiger snake venom, about the same amount of the venom of *Hoplocephalus bungaroides*, and about 1·0 milligramme of copperhead or taipan venom. It neutralizes only about 0·3 milligramme of brown snake or death adder venom and is quite ineffective against black snake venom.

After the bite of a large tiger snake, from 60 cubic centimetres to 100 cubic centimetres of high titre antivenene should be given intravenously. It is useless to give the remedy subcutaneously because its absorption is too slow. Before the injection is begun inquiries should be made as to whether the patient suffers from hay fever or asthma and as to whether any injections of horse serum have recently been made. In any case it is wise to test for sensitiveness to horse serum protein. This may be done by giving intradermally 0·1 cubic centimetre of a 1 in 10 dilution of horse serum. If no skin reaction occurs the treatment may be proceeded with at once. If, however, the patient is sensitive to horse serum protein, it is necessary to desensitize him as rapidly as possible. This may be done by the method described by Morgan and myself.[1] A dose of 0·025 cubic centimetre is first given subcutaneously, and at hour-hour intervals 0·1 cubic centimetre is given subcutaneously, 1·0 cubic centimetre is given subcutaneously, and 0·1 cubic centimetre is given intravenously. If this last dose causes no general allergic symptoms, the intravenous injection of serum may be given. The serum should be diluted to a strength of 1 in 5 and given very slowly at body temperature. If allergic symptoms occur, the injection must at once be discontinued, and 1·2 milligrammes (one-fiftieth of a grain) of atropine or 0·5 cubic centimetre to 1·0 cubic centimetre of a 1 in 1,000 solution of adrenaline chloride, or both, should be administered hypodermically.

General Treatment of the Snake-Bitten.

The patient should be kept at rest and not allowed to walk about, because exercise increases the circulation and the rate of absorption of venom. He should be kept warm and given plenty of fluid to combat the symptoms of peripheral circulatory failure. Alcohol in large doses is contraindicated, but a small amount may help to allay the patient's fears. The best stimulant is hot black coffee or caffeine. Three milligrammes (one-twentieth of a grain) of strychnine are used by many physicians who are experienced in the treatment of snake bite. The use of morphine is said to be contraindicated.

Reference.

(1) C. H. Kellaway and F. G. Morgan: "The Treatment of Snake-Bite in Australia", The Medical Journal of Australia, Volume II, October 17, 1931, page 482.

PIRATES AND BUCCANEERS.

By Laurence Duncan,
Melbourne.

I'm going to be a pirate with a bright brass pivot-gun,
And an island in the Spanish Main beyond the setting sun,
And a silver flagon full of red wine to drink when work is done,
Like a fine old salt-sea scavenger, like a tarry Buccaneer.
John Masefield.

There are no more fascinating figures in history than the pirates, and their most captivating chronicler of today is a member of our profession, Dr. Philip Gosse. He is probably the world's greatest authority on piracy; his "History of Piracy" and "The Pirate's Who's Who" are masterpieces of piratical erudition. Moreover, one of the most engaging pirates of fiction, Rafael Sabatini's Captain Blood, was a Bachelor of Medicine of Trinity College, Dublin, and the son of an Irish physician. Not only in the literature of piracy, but in the pirates themselves, medicine has an interest all its own; for to every pirate crew there was attached a surgeon with regular pay and a share in

the loot. Some of these surgeons were graduates from medical schools; others were unlicensed practitioners who had picked up some knowledge of surgery while serving as apprentices or servants to regular ship's surgeons. They all showed little inclination for the peaceful practice of their profession, preferring the prospect of adventure and speedy wealth under the "Jolly Roger".

One of the most interesting periods in the history of piracy is the last half of the seventeenth century, the period of the buccaneers,[1] who directed their piracy mainly against the ships and colonial possessions of waning Spain. Most of our knowledge of the buccaneers we owe to one of their surgeons, Esquemeling,[2] who wrote at first hand a detailed account of their activities. His book was written in Dutch and was first published at Amsterdam in 1678. A Spanish edition appeared three years later. An English edition appeared in 1684, entitled "Bucaniers of America: or a true account of the most remarkable assaults committed of late years upon the coasts of the West Indies, by the Bucaniers of Jamaica, and Tortuga, both English and French". Of the author himself we know little. His full name was Alexander Olivier Exquemelin or Esquemeling. A Fleming by race, he went out to Tortuga in 1666, as an indentured servant of the French West India Company. From one of his masters, who was a surgeon, he picked up the rudiments of his craft, and in 1668 secured the position of barber-surgeon on a private vessel. In that capacity he took part for several years in buccaneering expeditions.

A second buccaneer surgeon remembered as an historian is Lionel Wafer, the author of "A New Voyage and Description of the Isthmus of America", London, printed by James Knapton, at the Crown, in Saint Paul's Churchyard, in 1699. Wafer was born in Wales about the year 1660 and passed his childhood in Ireland and England. When fifteen years of age he joined the crew of the *Great Anne*, bound for Bantam, as servant of the ship's surgeon. Two years later he sailed as surgeon's dresser in the *Resistance* for the East Indies. Leaving the ship in the East, after various adventures he returned home in 1679. Soon after his return he again signed on as surgeon's assistant for a voyage to the West Indies. Deserting at Jamaica, he worked for a time on a plantation, until his brother set him up as a surgeon in Port Royal, Jamaica, where he practised his profession for a short period. His restive spirit was soon attracted by the glamour of the buccaneers. He enlisted as the surgeon of two privateers under Captain Lynch and Captain Cook on a cruise upon the Spanish Main. For six years he served with the buccaneers, and with William Dampier and others, under the command of Captain Bartholomew Sharp, took part in the great expedition across the Isthmus of Panama to the South Seas. Dampier, in his description of the expedition, makes reference to the esteem with which Wafer's services were regarded:

> When our surgeon, Mr. Wafer, was injured, we allowed him a slave to carry his things, being all of us the more concerned at the accident, because liable ourselves every moment to misfortune and none to look after us but him.

Subsequently Wafer received the King's pardon, settled in England in 1691 and died in 1705.

Of most of the buccaneer surgeons knowledge is very scanty; their names appear in contemporary writings, but there is little information about their careers. There was the Welshman Peter Scudamore, one of the first doctors to sign pirates' articles, who was Captain Bartholomew Robert's surgeon on his privateering expedition down the Guinea Coast in 1721. Captured with the rest of the pirate crew by a British man-of-war, he was hanged at Cape Coast Castle in 1722, singing the thirty-first psalm while his head was placed within the hangman's noose. Another notable character was Robert Byndbloss, surgeon to Sir Henry Morgan, that most efficient buccaneer, who at one time commanded a fleet of fifty sail, captured and sacked Panama and was afterwards made Lieutenant-Governor of Jamaica by Charles II. Byndbloss married Morgan's sister and settled down as a planter in Jamaica.

The most famous of all the buccaneer doctors, though his interest in the enterprise was commercial rather than medical, is Dr. Thomas Dover (1660-1742), the inventor of Dover's powder. In 1708 he was one of the promoters and commanders of a privateering expedition to the South Seas, an expedition which realized £170,000. He is now remembered as the discoverer of Alexander Selkirk, whose lonely exile on the island of Juan Fernandez inspired Defoe's "Robinson Crusoe".

The son of Captain John Dover, one of Prince Rupert's officers, he was born in Warwickshire in 1660, took the degree of Bachelor of Medicine at Cambridge, and for a time was a pupil of Sydenham, by whom he was cured of smallpox. In 1684 he began to practise in Bristol. Twenty years later he and other Bristol magnates and adventurers organized a privateering expedition. On August 2, 1708, the expedition, consisting of two ships, the *Duke*, of 320 tons, 30 guns and 117 men, and the *Duchess*, of 260 tons, 26 guns and 108 men, under the command of Captain Woodes Rogers, with Dover as second in command, set sail from Bristol. In addition to being second captain, Dover was captain of the marines and president (with a casting vote) of the council the owners had instituted to control the progress of the voyage and the settling of all questions and disputes.

Dover had no medical duties, for the expedition was well equipped with surgeons. The third mate, John Ballet, was "designed surgeon if occasion arose". He had been Captain Dampier's surgeon on his voyage round the world. In an official

[1] The word buccaneer was first applied to French settlers in Haiti who hunted the wild cattle and used a *boucan* or wooden grid to broil their beef. Then, from the marauding habits of these people, it became applied to piratical sea-rovers.

[2] "Mr. Vrijman has recently communicated to me his interesting discovery from 'The Surgeon's Guildbook 1579-1737' in the municipal archives at Amsterdam, that the Exquemeling of Hanfleur passed his State examination for surgeon in 1679, the year after the publication of his first volume in the Dutch capital." (Philip Gosse, "A History of Piracy".)

capacity there were a surgeon (James Wasse), a surgeon's mate (Charles May) and an assistant (John Lang). Samuel Hopkins, Dover's brother-in-law, was apothecary to the expedition.

As sailing master and pilot for the South Seas, and a member of the council, there sailed the famous circumnavigator of the globe, naval officer and buccaneer, William Dampier. It was from a previous privateering expedition commanded by Dampier that Alexander Selkirk, then sailing master of the Cinque Ports, had been, in 1704, marooned on the island of Juan Fernandez. The two ships put in at Cork, where the captain completed and reconstituted his crew and restowed the hold; and then, with a full complement of sailors (333) in both ships, of whom one-third were foreigners of most nations, they sailed from Cork on September 1, bound for Madeira. On September 18, in sight of Tenerife, a small Spanish vessel was captured, and after crossing the Tropic of Cancer they captured another small craft. Their next port of call was the Cape Verde Islands; thence they proceeded to Isle Grande, just to the southward of Rio de Janeiro, where they overhauled their ships.

On December 3 they sailed from Isle Grande and made their way down the coast of South America towards Cape Horne; and on January 31, 1709, they arrived at Juan Fernandez. Next day, late in the afternoon, Dover took a boat in, the land being then twelve miles distant; but at dusk, seeing a bright light on the shore and fearing that French ships were concealed in the bays, he was afraid to land and returned to the ship. Next day Dover again took a boat in. On approaching the shore they saw a man clad in garments of goatskin, running down to the beach to meet them. It was Selkirk; and he told them how on the previous day he had seen the two ships and in the evening had lit a huge bonfire to attract their attention. They took him on board, and on February 14 departed from Juan Fernandez, bound, by way of Lobos, for Guayaquil, from the capture of which they expected great plunder. On their way they captured several more prizes, one of which they converted into a hospital ship, sending aboard her all the sick, with a surgeon from each ship and Selkirk in command. On account of delay in capturing the city, Guayaquil[1] yielded much less loot than the buccaneers expected; but a short time after leaving there they made a good haul in the capture of a rich Spanish treasure galleon from Manila. In accomplishing her capture several lives were lost, and Captain Woodes Rogers was severely wounded. A dispute then arose as to who was to command their valuable prize. Eventually it was settled that Dover should command her, with two capable officers to act under him as navigators; and under his command she continued her voyage to the East Indies and thence to England, arriving there on October 14, 1711. After his adventures Dr. Dover settled down again to medical practice, at first in Gloucestershire, finally in London. His reputation for treating many diseases with large doses of mercury earned him the nickname of "the quicksilver doctor". In 1733 he published a book entitled "The Ancient Physician's Legacy to his Country",[1] in which he gave the prescription for his famous powder. For most of the time he practised as a physician in London till his death in 1742.

[1] At Guayaquil, 180 of the crew of one ship went down with the plague. Dover ordered the ships' surgeons to bleed every sick man to a hundred ounces and to give large draughts of dilute sulphuric acid. All but eight recovered. Guayaquil has a later medical interest, for it was there that the Japanese scientist Noguchi, in 1918, discovered the organism of yellow fever in the blood of a patient suffering from the disease. Noguchi showed that guinea-pigs inoculated with the blood of this infected case developed symptoms similar to those of yellow fever, and he was able to demonstrate the same organism in the sick guinea-pig.

[1] "The Ancient Physician's Legacy to his Country, being what he has collected himself in Fifty-nine years' practice, or an account of the Several Diseases incident to Mankind described in so plain a manner that any person may know the nature of his own Disease. Together with several remedies for each Distemper faithfully set down. Designed for the use of all Private Families. *Homines ad Deos nulla in re proprius accedunt quam salutem hominibus dando.* Cic. by Thomas Dover, M.B., London, 1732."

AN OUTBREAK OF GASTRO-ENTERITIS: SUSPECTED FOOD-POISONING WITH MILK AS A POSSIBLE VEHICLE.

By John Dale,
Medical Officer of Health, City of Melbourne.

An outbreak of mild gastro-enteritis, strongly suggestive of food poisoning, occurred in Melbourne during the latter half of March, 1937. It was remarkable in that it was mainly confined to the nurses of hospitals and sanatoria, and that milk was the suspected foodstuff.

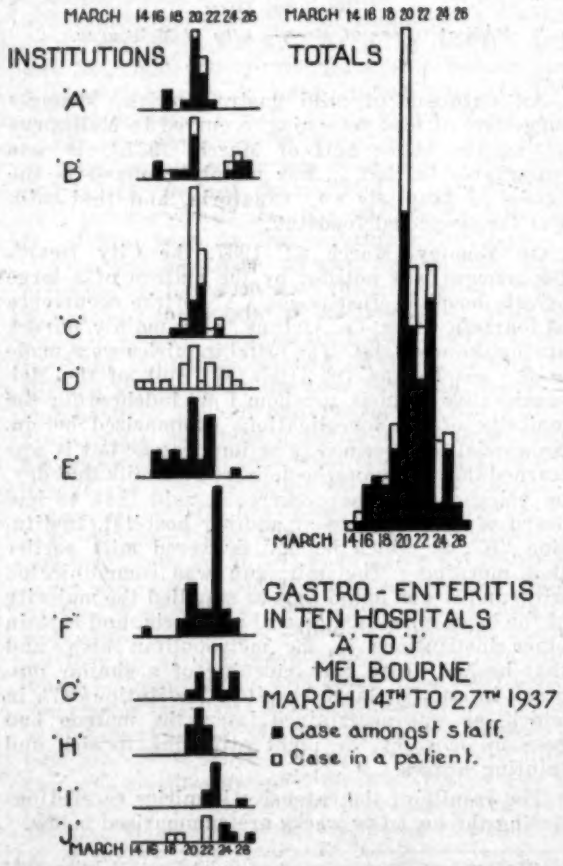
On Monday, March 22, 1937, the City Health Department was notified by the matron of a large private hospital, Institution "A", of the occurrence of fourteen cases, the victims being mainly nurses, during the week-end. The usual inquiries were made at the hospital by Dr. Hilda W. Bull, of the Melbourne City Council, to whom I am indebted for the majority of the investigations summarized herein. No special food seemed to be implicated; but it was learned that the man who delivered the milk that day, on being told of the occurrence, said that he had heard of similar cases at another hospital, Institution "B", at which he had delivered milk earlier that morning. The dairyman was communicated with, and it was found that he supplied the majority of the large hospitals, several sanatoria, and certain other institutions in the metropolitan area, and that he had heard that morning of a similar outbreak in another large hospital, Institution "C", in which, as was ascertained later, the matron had been up most of the night attending to sick and fainting nurses.

The results of the extensive inquiries carried out during the next few weeks are summarized below.

Distribution of Cases.

It was found that cases had occurred in ten widely scattered institutions: four general hospitals, two special hospitals, two intermediate hospitals and two sanatoria. So relatively trivial was the nature of the illness that it is unlikely that any of the other nine institutions discovered to have been affected would have notified the health authorities, though they agreed in each case that definite outbreaks had occurred. The medical superintendent of one large general hospital replied in the negative to inquiries made on March 22, although on the following day, when seventeen cases came to notice, it was readily agreed that something was amiss, and a further fourteen cases were found to have occurred, with onset during the preceding four days.

Particulars were obtained of 197 cases, which included all the more severe; but there were others, less severe, of which details were not available. They were distributed among ten institutions, as shown in Graph I.



The cases occurred between March 14 and March 27, a period of warm and humid weather, and, as may be seen from Graph I, no fewer than 87 occurred on March 20 and March 21 and an additional 53 on March 22 and March 23. Thus 140 out of 197 cases occurred during the four days March 20 to March 23. The maximum incidence in Institutions "A", "B", "C", "D" and "E" was on March 20, in "H" on March 21, in "J" on March 22, and in "F", "G" and "I" on March 23.

An interesting feature was that in the ten hospitals affected the approximate numbers of persons apparently at risk were 85 doctors, 1,023 nurses, 251 domestics, and 1,880 patients, and during the period from March 14 to March 27, inclusive, 8 doctors, 111 nurses, 27 domestics and only 51 patients were affected. Thus the incidence amongst members of staffs was 11% and amongst patients 3%. Details are shown in Table I.

Symptoms.

The onset of the sickness was sudden. The chief symptoms were nausea, vomiting, faintness, abdominal pain and diarrhœa. Pains in the back and limbs were frequent and often persistent. Rise of temperature was rare, but was noted in a number of instances. Recovery was usually rapid, within twenty-four hours, and many of those affected remained on duty. In a small proportion of cases, however, the illness was of several days' duration.

Investigation of the Cause.

Suspicion naturally fell upon the milk supply; and all the institutions concerned were advised at the outset to boil or pasteurize the milk, though the advice was not followed in all cases. Inquiries showed that no other foodstuffs were common to all the institutions concerned.

It was found that the dairy supplied, in addition to the institutions affected, a large maternity hospital, a children's hospital, a children's home, and two other residential institutions for adults, at which no cases were discovered. At the children's hospital and the children's home the milk was pasteurized or boiled before consumption.

The dairy farmer concerned, who had the contract for supply to all these institutions, milked about 300 cows on his own farm and supplemented his supply with milk from another 200 cows on eight adjacent farms. The milk was brine-cooled immediately at the main farm, the milk from the subsidiary farms being collected by motor and passed over the same cooler before the milking at the main farm was finished. It was then delivered within a few hours by lorry to the institutions, where it was received into cool storage and distributed in the main without any further treatment.

At the outset it was stated that cases of gastro-enteritis were occurring generally in the locality of the dairy, about twenty miles out of town. Subsequent inquiries failed to substantiate this, but showed that six members at least of a large family employed as milkers on the main farm had recently suffered from diarrhœa and vomiting, and one in

Table I.

Showing Numbers of Staff and Patients Resident in Each Institution and the Numbers Affected.

	Doctors.	Nurses.	Domestics.	Patients.	Totals.
"A" Intermediate hospital—					
Total numbers	—	48	14	71	133
(Numbers affected)	—	(13)	(3)	(3)	(19)
"B" General hospital—					
Total numbers	7	86	40	120	253
(Numbers affected)	(1)	(6)	(7)	(5)	(19)
"C" Special hospital—					
Total numbers	3	118	13	355	489
(Numbers affected)	(—)	(15)	(2)	(16)	(33)
"D" Sanatorium—					
Total numbers	2	19	18	120	159
(Numbers affected)	(—)	(2)	(—)	(16)	(18)
"E" General hospital—					
Total numbers	27	233	68	390	718
(Numbers affected)	(5)	(21)	(3)	(—)	(29)
"F" General hospital—					
Total numbers	20	190	40	320	570
(Numbers affected)	(—)	(28)	(6)	(3)	(37)
"G" Intermediate hospital—					
Total numbers	—	22	4	40	66
(Numbers affected)	(—)	(10)	(1)	(3)	(14)
"H" General hospital—					
Total numbers	17	164	—	234	415
(Numbers affected)	(2)	(9)	(—)	(—)	(11)
"I" Special hospital—					
Total numbers	8	139	30	180	357
(Numbers affected)	(—)	(7)	(1)	(—)	(8)
"J" Sanatorium—					
Total numbers	1	4	24	50	79
(Numbers affected)	(—)	(—)	(4)	(5)	(9)
Total numbers	85	1,023	251	1,880	3,239
(Total numbers affected)	(8)	(111)	(27)	(51)	(197)

the household of one of the subsidiary farms. The family of milkers were unfortunately suspicious and non-cooperative, and it was impossible to ascertain the exact dates of their illnesses, which were ascribed to a "piece of corned beef".

Extensive bacteriological examinations of milk taken from the various hospitals and from the dairy farm and its subsidiaries were carried out in cooperation with the State departments of health and agriculture. The counts were particularly low, as was indeed to be expected in view of the unusual skill and experience of the dairyman and the good facilities for immediate refrigeration and rapid handling. Special examinations of many samples of milk for bacteria of food poisoning and other unusual organisms, carried out at the hospitals concerned and at the bacteriological department of the University of Melbourne, gave no significant results. The same applies to examinations of vomitus and stools, and to blood samples taken after several weeks from some of the patients whose illness was more prolonged, and from milkers at the main farm who had been affected. For these examinations I am indebted in particular to Mr. T. S. Gregory, of the University of Melbourne, who did indeed succeed in isolating from the stool of a patient at each of two hospitals an organism having the general characters of salmonella, which showed definite agglutination with the serum of the patients concerned and with that of other patients. The organism, however, failed to be agglutinated by any type sera and was then found to be agglutinated in similar dilutions by a proportion of sera collected for other purposes. The results of extensive bacteriological examinations were therefore negative.

Discussion.

The prevalence here described may have been an instance of mild food poisoning, in which case the milk supply was the only possible vehicle.

All the patients in the intermediate hospital first visited had drunk raw milk from four to eight hours before the symptoms occurred, and in other instances the relation to the drinking of milk seemed definite, as, for example, in the case of the matron of "A", who had taken what was for her an unusual quantity of milk for lunch on March 20 and was violently sick about four hours later. Nevertheless it was not possible to discover any clear relation between the amount of milk consumed and the severity of the symptoms. Careful inquiry in 197 cases showed, moreover, that 135 patients had consumed raw milk within four to eight hours before the symptoms occurred, 48 had consumed raw milk only in small quantities, as in a cup of tea, and 14 stated that they never took milk except in milk puddings or boiled coffee, or in some other cooked form. In one of the general hospitals it was found that about ten patients with gastric ulcer who were taking a milk diet did not show any symptoms whatever. The milk was taken cold or slightly warmed, and a powder of the three carbonates, sodium, calcium and magnesium, was given after each milk ration.

The mildness of the attacks may be explained by a light infection of the milk with organisms of the food-poisoning group, or conceivably with staphylococci, and the source may have been from a patient at one of the dairies. Owing to the rapid cooling and immediate transfer of the milk to the city, there would not be much opportunity for multiplication of organisms in the milk.

The differing periods of incidence between the institutions affected and the freedom of some of the institutions supplied might even be expected in view of the fact that the supply, though a large one, was never "bulked", but was passed from the cows straight over the brine-cooler into fifty-quart cans. Thus it is highly probable that the more heavily infected fraction or fractions of the supply would not be evenly mixed with the remainder and could be distributed in a different manner each day amongst the different institutions.

Regarding the remarkably high relative incidence among the staff as compared with patients, it is possible that milk for the use of the staff was less carefully or differently treated and may have stood for longer periods at room temperature or under warmer conditions. It is also suggested, by experience of sea sickness, that persons who are moving about are more likely to succumb to nausea and vomiting than those resting in bed. Furthermore, the medical superintendent of one of the sanatoria, Institution "D", noted that those of his patients who complained of pains in the limbs were all ambulatory.

Inquiries were made at other large hospitals which did not get milk from the suspected source, including a fever hospital with seven doctors, 174 nurses, 51 domestics and 402 patients, and of three other large intermediate hospitals with a total of 291 nurses, 99 domestics and 416 patients. Of these, none reported any prevalence except one intermediate hospital, which reported three cases, the patients being two nurses and a domestic, on March 26, 27 and 29 respectively. Another sanatorium with a different milk supply reported no cases during the period in question, but a small outbreak on March 2, involving 16 patients out of 100. Inquiries were also made of two large industrial establishments employing large staffs of young women and maintaining a medical and nursing service on the premises. The records of these showed no unusual incidence of gastro-enteritis during the period.

It is possible that the outbreak was not one of food poisoning, but of "gastric influenza". Throughout the metropolitan area there was at about the same time a seasonal prevalence of gastro-enteritis of a mild type. Such prevalence was to some extent common talk and was confirmed by inquiries from general practitioners. Moreover, the Children's Hospital of the city had a number of in-patients and numerous out-patients suffering from entero-colitis.

If the symptoms were due to an infection spread by air or by contact and not by food, and if, therefore, the almost simultaneous occurrence of the outbreaks in the hospitals was merely coincidental, then the high incidence among nursing and domestic staffs would have an analogy in the similar distribution of ordinary influenza in sanatoria during epidemic times.

On the whole it seems, however, most probable that the outbreak was one of food poisoning spread by milk.

A CONSIDERATION OF GENERAL ANÆSTHESIA FOR DENTAL SURGERY.[1]

By Noel E. Heath, L.D.S. (Victoria), D.D.Sc.
Melbourne.

(From the Baker Medical Research Institute, Alfred Hospital, and the Melbourne Dental Hospital.)

It is generally agreed that, when general anæsthesia is used for the extraction of teeth, the position of the patient is of great importance. It is unfortunate, in this connexion, that divergent opinions frequently exist between the medical practitioner and dentist. The latter prefers to have the patient in either the seated upright or semi-reclining position, whilst the majority of medical practitioners, when called upon to give a dental anæsthetic, choose the supine position. In the interests of the patient it is highly desirable that this anomaly be rectified and that the ideal conditions to meet the requirements of both the dental surgeon and the anæsthetist be clearly defined.

The seated upright and remi-reclining positions in the chair are undoubtedly the most convenient for the operations of teeth extraction and minor mouth surgery; it is easier for the dental surgeon to control the head and thus the operation can be performed with greater efficiency. There is less danger, therefore, of having such accidents as breakage of teeth and roots; and if such accidents do occur, any further manipulations can be carried out more rapidly. Finally, the actual duration of the anæsthesia is shortened. Apart from this, the seated upright position or the semi-reclining position allows the operator to keep, more easily, the mouth free from blood and saliva. With the patient in this latter position, blood and saliva, as well as any foreign material, such as a tooth filling or root, will tend to drop first to the floor of the mouth.

In the supine position, either in the chair or on the table, the patient is unfavourably placed for such operations as the removal of teeth. The surgeon is inclined to take longer over the operation, the risk of operative complications and of the inhalation of blood, septic material or foreign bodies is greater, and the time of anæsthesia is prolonged. Again, with the patient in the supine position, a tooth slipping from the forceps, a broken root or any foreign body in the oral cavity tends immediately to drop to the back of the mouth, and the risk of its lodgement in the trachea or lungs is considerable.

In this connexion it is interesting to note the results of Corper.[(1)] This worker observed that under ether anæsthesia aspiration of fluids instilled into the nose occurred readily in dogs and rabbits placed in the horizontal position.

Again, Moore, from a statistical study based on reports from 1,020 American laryngologists, found

[1] This article summarizes certain sections of a thesis recently accepted for the degree of Doctor of Dental Science: "A Critical Survey of Anæsthesia and Analgesia in Dental Surgery with Special Reference to Determination of the Safest Methods."

that in 202 cases of pulmonary abscesses following operations about the upper respiratory passages, 134 patients were operated upon in the recumbent position and 64 in the seated upright position. In a *questionnaire* sent out by the writer to Victorian dentists it was found that in the cases of pulmonary abscess reported, of which details of position were given, eleven patients had been operated upon in the supine position and only two in the seated position in the chair.

Admittedly inspiration of foreign material during the course of an anæsthetic can occur in any position; but it is the writer's belief that this is more likely to occur during operations in the supine position.

These, then, are the considerations that would influence the writer in the selection of a suitable position for dental anæsthesia. However, before the physician can adopt the above suggestions, he must satisfy himself that no physiological contra-indications to this procedure exist. It is important to remember that a change in posture, say from the horizontal to the erect position, tends to embarrass the circulation. Thus, in the erect position the force of gravity is exerted on a column of blood, whose length is that of the body. If this hydrostatic force were unchecked, it is obvious that blood would tend to stagnate, particularly in the splanchnic area, and cerebral anæmia would ensue.

This effect is well seen in a rabbit of the English hutch type, with a large pendulous belly. If such an animal is held in the vertical position for some minutes, blood stagnates in the splanchnic area and death from cerebral anæmia will result within ten minutes. If the experiment is now repeated on another animal with a tight abdominal binder, no untoward effects are noticed.

In man, and animals such as the monkey and dog, it is found that very efficient mechanisms exist for compensating the force of gravity. In these animals changes can be made from the horizontal to the vertical position without circulatory embarrassment; and furthermore, during maintenance of the erect position the hydrostatic influence of gravity is completely compensated for.

According to Leonard Hill three main factors are concerned with this regulatory mechanism. In brief, they are: (i) the tonicity of the abdominal musculature, (ii) the tone of the splanchnic blood vessels, and (iii) the pumping action of the respiratory movements. Without a discussion of the mode of action of these factors, it is clear that any interference with their normal functioning will lead to impairment of the circulation. The immediate problem that confronts us is to inquire whether anæsthesia upsets this compensatory mechanism. If such proves to be the case, then, despite the advantages discussed above, the vertical position for dental anæsthesia must be abandoned in favour of the recumbent position. In order to investigate this problem I have carried out various animal experiments and have also made a large number of clinical observations.

Experimental Data.

In these experiments dogs were used, and the influence of various anæsthetic agents on the normal compensatory mechanism was studied. As previously stated, "compensatory mechanism" refers to the adjustment of the circulation to oppose the effect of gravity during assumption or maintenance of the upright position. The dog was chosen because, in common with man, it possesses a very efficient compensatory mechanism. The general scheme of these investigations was as follows.

Half an hour prior to the experiment 0·03 gramme (half a grain) of morphine was injected subcutaneously. Then, with the animal under nitrous oxide anæsthesia, a tracheal cannula was inserted and connected to the anæsthetic apparatus, so arranged as to allow inhalation with ether, nitrous oxide and oxygen or chloroform as desired. A cannula was placed in the carotid artery, and blood pressure changes were recorded on a kymograph drum. During anæsthesia the animal was moved from the supine position to either the vertical feet-down or vertical feet-up position, and the blood pressure responses were noted.

In the first tracing (Figure I) the dog was under nitrous oxide and oxygen anæsthesia and was moved from the horizontal to the vertical feet-down position. It is seen that after a small initial fall the blood pressure rises quite rapidly to the normal level.

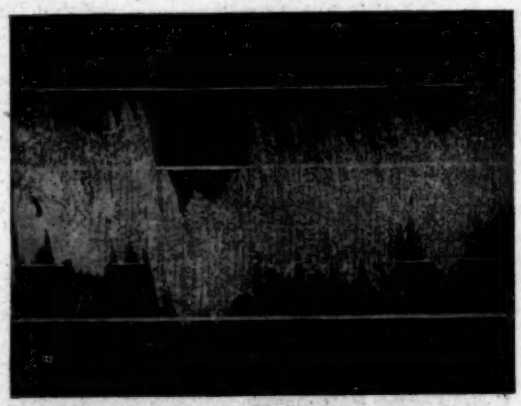


Figure I.

The response of the blood pressure of a dog to movement from the horizontal to the vertical feet-down position, whilst under the influence of nitrous oxide and oxygen anæsthesia. *A*: horizontal; *B*: vertical feet-down; *C*: horizontal.

In the second tracing (Figure II) is shown the response of the blood pressure in the dog to a change of position, from the horizontal to the vertical feet-up position. Here it is noted that, after first a rise and then a fall, the blood pressure rises to a slightly higher level.

Experiments on similar lines to the above were carried out with light ether anæsthesia, and the results obtained were identical with those just described, except that the return to normal was slightly slower than that observed under nitrous oxide and oxygen anæsthesia.

In the third tracing (Figure III) is shown the result of an extreme type of experiment. Here both carotid arteries were tied off, the blood flow to the

vasomotor centres of the brain thus being seriously diminished. The animal was anæsthetized with nitrous oxide and oxygen; and after a steady state

Figure II.
The response of the blood pressure of a dog to change from the horizontal to the vertical feet-up position, whilst under nitrous oxide and oxygen anæsthesia. *A*: horizontal; *B*: vertical feet-up; *C*: horizontal.

in respect of blood pressure had been achieved, a change from the horizontal to the vertical feet-down position was made. It is noted that a very pronounced fall in blood pressure occurred and that

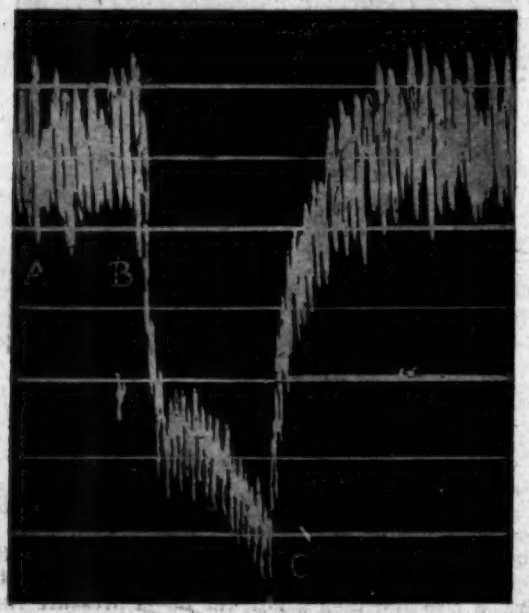


Figure III.
The response of the blood pressure of a dog to movement from the horizontal to the vertical feet-down position, while under nitrous oxide and oxygen anæsthesia, and interference with the compensatory mechanism by tying off the central ends of both carotid arteries. *A*: horizontal; *B*: vertical feet-down; *C*: horizontal.

this was not compensated for. This suggests the importance of anoxæmia in relation to the normal functioning of the compensatory mechanism.

In the fourth tracing (Figure IV) the response of the blood pressure to changes of position from the horizontal to the vertical feet-down position is shown when the animal is initially deeply anæsthetized with ether. It is seen that the initial fall persists, even though the anæsthetic is discontinued.

Summary of the Results of the Experiments.

From these experiments and others that have not been discussed the following summary of results can be given.

1. Under the influence of nitrous oxide and oxygen anæsthesia, changing of a dog's position from the horizontal to the vertical feet-down position results in an initial fall of blood pressure, followed fairly quickly by a compensatory rise until the blood pressure reaches its previous normal level, or nearly reaches it, according to the individual difference in the dogs.

2. Under the influence of light ether anæsthesia, changing of a dog's position from the horizontal to

Figure IV.
The response of the blood pressure of a dog to changes of position from the horizontal to the vertical feet-down position, when the animal is first deeply anæsthetized with ether. *A*: horizontal; *B*: vertical feet-down (anæsthesia discontinued); *C*: horizontal.

the vertical feet-down position results in an initial fall in blood pressure, followed by a compensatory rise. This rise occurs more slowly than with nitrous oxide and oxygen anæsthesia.

3. Under the influence of nitrous oxide and oxygen anæsthesia, which is allowed to go past the stage of deep surgical anæsthesia, with pronounced anoxæmia, the compensatory mechanism acts more slowly when a dog is moved from the horizontal to the vertical feet-down position. The blood pressure slowly builds up to its previous normal level, or almost reaches it.

4. When a dog is anæsthetized with ether and the anæsthesia is "forced" until the animal is very deeply anæsthetized, the moving of the animal from the horizontal to the vertical feet-down position results in a large initial fall in blood pressure, which is maintained even though the anæsthesia is allowed to lighten considerably. This phenomenon is well shown in Figure IV.

5. If, under the influence of light ether anæsthesia, the animal is moved from the horizontal to the vertical feet-down position, the compensatory rise in blood pressure after the initial fall can be checked by "forcing" of the anæsthetic.

6. If the compensatory mechanism is interfered with by tying off the central ends of both carotid arteries, the moving of the animal from the horizontal to the vertical feet-down position results in an initial fall in blood pressure, followed by a

progressive further fall. Tying off the central ends of both carotid arteries results in insufficient oxygenation of the vasomotor centre in the brain.

Conclusion from the Results of the Experiments.

The conclusions to be drawn from the series of experiments are the following.

1. The compensatory mechanism of the dog in changes of position is not measurably interfered with by a properly balanced anæsthesia with nitrous oxide and oxygen; but pronounced anoxæmia during the anæsthesia does interfere with this mechanism.

2. Light ether anæsthesia interferes very little with the compensatory mechanism of the dog, but has a slightly greater effect than has nitrous oxide and oxygen anæsthesia.

3. The "forcing" of ether anæsthesia has a definite effect on the compensatory mechanism of the dog, and this effect is continued for some time after the anæsthetic is withdrawn.

Clinical Observations.

Although the animal experiments proved that anæsthesia of the moderate degree usually employed in dental surgery caused no interference with the normal compensatory mechanism, it seemed worth while to study the problem in the human being. Observations were taken in three series of cases.

In the first series anæsthesia was induced with nitrous oxide and oxygen, the patient being in the sitting upright position in the chair. In this series ninety-one patients were operated upon.

In the second series of cases anæsthesia was induced with nitrous oxide and oxygen, the patient being in the supine or semi-reclining position. In this series twenty-one patients were operated upon.

In the third series anæsthesia was induced with ethyl chloride and ether, the patient being in the supine or semi-supine position. In this series twenty-three patients were operated upon.

In order that uniform conditions should be obtained, all the patients selected were young adult females, and were anæsthetized and operated upon at approximately the same time of day. The number of cases in each series is small, and the results possibly may not have the value that a larger series would have. They are of some value, however, particularly in giving data for comparison of the circulatory reactions of the patients to ethyl chloride and ether anæsthesia with their reactions to nitrous oxide and oxygen anæsthesia for these short operations. The longest time between the beginning of induction of anæsthesia to the end of operation in any of these cases was fifteen minutes. Table I gives a comparison of the reactions in the three series of cases.

If the reactions of the patients in the first and second series are compared, it will be noted that they vary very little. In the upright sitting position the systolic blood pressure rose in 99% of cases; in 24% of these it rose 5 to 20 millimetres of mercury, and in 76% it rose 20 millimetres of mercury or more.

In the supine or semi-supine patients anæsthetized with nitrous oxide and oxygen the systolic blood pressure rose in 91% of cases. In 20% it

Table I.

Variations in Blood Pressure, Pulse Pressure and Pulse Rate.

No. of Group.	No. in Group.	Anæsthetic Agents.	Position of Patient.	Systolic Blood Pressure.								Diastolic Blood Pressure.								Pulse Pressure.								Pulse Rate.							
				Rise of 5 to 20 Millimetres of Hg.		Rise of 20 or More Millimetres of Hg.		Percentage of Total in which a Rise Occurred.	No Alteration.		Fall.		Rise of 5 to 20 Millimetres of Hg.		Rise of 20 or More Millimetres of Hg.		Percentage of Total in which a Rise Occurred.	No Alteration.		Fall.		Rise of 5 to 20 Millimetres of Hg.		Rise of 20 or More Millimetres of Hg.		Percentage of Total in which a Rise Occurred.	No Alteration.		Fall.		Rise of 5 to 20 Beats per Minute.		Rise of 20 or More Beats per Minute.		Percentage of Total in which a Rise Occurred.	No Alteration.		Fall.	
				Number.	Percentage.	Number.	Percentage.		Number.	Percentage of Total.	Number.	Percentage of Total.	Number.	Percentage.	Number.	Percentage.		Number.	Percentage of Total.	Number.	Percentage of Total.	Number.	Percentage.	Number.	Percentage.		Number.	Percentage of Total.	Number.	Percentage of Total.	Number.	Percentage.	Number.	Percentage.		Number.	Percentage of Total.	Number.	Percentage of Total.
I	91	Nitrous oxide and oxygen.	Seated upright.	21	24	68	76	99	—	—	1	1	42	49	44	51	95	2	4	3	6	39	45	44	55	80	3	3	7	8	21	25	65	76	95	3	2	15	17
II	23	Nitrous oxide and oxygen.	Supine or semi-supine.	4	20	16	80	96	2	7	1	—	9	47	10	53	89	2	8	1	4	12	63	7	37	88	—	—	3	12	6	32	13	68	88	—	—	8	12
III	23	Ethyl chloride and ether.	Supine or semi-supine.	11	52	10	48	91	—	—	2	9	10	73	6	27	95	—	1	—	5	14	88	2	12	74	2	9	4	18	4	29	10	71	63	2	9	7	26

rose 5 to 20 millimetres of mercury, and in 80% it rose 20 millimetres of mercury or over.

In the upright sitting position the diastolic blood pressure rose in 95% of cases. In 49% of these it rose 5 to 20 millimetres of mercury, and in 51% it rose 20 millimetres of mercury or over.

In the supine or semi-supine position the diastolic blood pressure rose in 88% of cases. In 47% of these it rose 5 to 20 millimetres of mercury, and in 53% it rose 20 millimetres of mercury or over.

In the upright sitting position the pulse pressure with nitrous oxide and oxygen anæsthesia rose in 89% of cases. In 45% of these it rose 5 to 20 millimetres of mercury, and in 55% it rose 20 millimetres of mercury or over.

In the supine or semi-supine position the pulse pressure rose in 88% of cases. In 63% of these it rose 5 to 20 millimetres of mercury, and in 37% it rose 20 millimetres of mercury or over.

It will be seen, therefore, by Table I, that the readings of systolic and diastolic blood pressure, pulse pressure and pulse rates with the patient in the supine and semi-supine positions are in each case slightly lower than those taken with the patient in the upright sitting position.

If the series of patients anæsthetized with nitrous oxide and oxygen in the supine and semi-supine positions is compared with the series of patients anæsthetized with ethyl chloride and ether sequence in the same positions, it will be seen that in these short operations with light anæsthesia the reactions are very similar. The systolic and diastolic blood pressures rose by almost the same percentage in both series.

The important difference is the fact that those cases in which the patient's blood pressure, both systolic and diastolic, rose over 20 millimetres of mercury are a much greater percentage of the cases in which the patients were anæsthetized with nitrous oxide and oxygen than of those in which anæsthesia was induced with ethyl chloride and ether.

The percentage rise in pulse pressure during anæsthesia with ethyl chloride and ether (74%) is lower than during anæsthesia with nitrous oxide and oxygen (88%). The percentage rise in pulse rate during anæsthesia is much less with ethyl chloride and ether anæsthesia (63%) than with nitrous oxide and oxygen anæsthesia (88%).

These clinical and experimental observations clearly demonstrate that moderate anæsthesia with nitrous oxide and oxygen or ether causes no circulatory embarrassment in the normal individual seated in the upright position in the dental chair.

In passing, brief mention should be made concerning the use of chloroform. There is ample experimental and clinical evidence to show that this anæsthetic rapidly paralyses the compensatory vasomotor mechanism and damages the heart. Its use in dental surgery is contraindicated where the upright position is desired; in fact, this type of anæsthesia should not be tolerated by the dental surgeon if nitrous oxide or ether is available.

The Choice of an Anæsthetic for Dental Surgery.

It is generally accepted that from the standpoint of the patient's safety and comfort, nitrous oxide and oxygen anæsthesia is superior to ethylene and oxygen or ether anæsthesia. Nitrous oxide given by the intranasal method is probably the most suitable method of anæsthesia for minor surgical procedures in the mouth. The gases pass *via* a nasal inhaler into the nose, nasopharynx and lungs. The mouth is kept closed during induction. When the mouth is opened for the operation the oropharynx should be immediately packed with cotton-wool wrapped loosely in gauze. The function of such a pack is twofold: (i) to prevent the ingress of air that would upset the balance of the anæsthetic gases, (ii) to prevent blood and mucus from entering the pharynx.

In long operations, despite all precautions, there is a serious risk of the inhalation of blood and mucus, and it is desirable to use endotracheal anæsthesia, either insufflation or inhalation. Just as in anæsthesia for major surgery, the necessity may arise in dental surgery for some form of artificial respiration. Kaye[2] has pointed out that a means of intubating and larynx and of insufflating air or oxygen should always be at hand, since it affords the best method of artificial respiration.

In some few cases the requisite depth of anæsthesia cannot be obtained with nitrous oxide and oxygen alone. Most modern gas anæsthetic machines have an attachment by means of which ether may be admitted to the anæsthetic mixture.

If the teeth are to all appearances easy to extract and if the operation will not take more than a few minutes, the procedures described above should suffice. However, if the teeth, even though few in number, give indications of being difficult to extract, endotracheal anæsthesia should be used. One broken tooth with a resistant root and hard bone may take anything up to twenty or thirty minutes to extract; and no matter what care is taken, some material may pass the packs and enter the lung. For full details concerning the technique of endotracheal anæsthesia the reader is referred to Chapter XI of the monograph "Practical Anæsthesia".[3]

Endotracheal inhalation anæsthesia with a wide bore catheter packed around with the long gauze "scarf pack" has great advantages in dental surgery, since the inhalation of blood and mucus is entirely obviated. Furthermore, the anæsthetist is out of the way, leaving an unencumbered field for the surgeon.

The foregoing remarks define, then, the dentist's conception of the ideal form of anæsthesia for his operations; unfortunately, however, this ideal cannot always be allowed in general practice. Usually the patient prefers his or her own physician to administer the anæsthetic, and it frequently happens that open ether has to be used, since no other suitable anæsthetic is available.

For the purpose of dental operations, anæsthesia with ether by the open method should be used only

in those cases in which the teeth are few and easy to extract and can be extracted during the first induction of anæsthesia. The mouth should be well swabbed during the course of the operation, the oropharynx should be packed, and a suction apparatus should be in continuous use, keeping the mouth clear of blood and mucus. It is most undesirable to find that the operation cannot be completed during the period of narcosis provided by the first induction, so that the patient begins to wake up and that anæsthesia must be reinduced. During this period of reinduction there is no way in which the mouth contents may be effectively removed, and a quantity of mucus and blood must be inhaled. After the operation the mouth should be regularly swabbed until the patient is able to expectorate. Even at this period the bed or couch on which the patient is reclining should have the foot raised about 15·0 centimetres (six inches), and the patient should be kept without a pillow.

Acknowledgement.

I wish to express my gratitude to Dr. A. B. Corkill, of the Physiological Department of the Baker Medical Research Institute, for much valuable guidance and help in carrying out the experimental work described in this paper.

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A POST-GRADUATE HOLIDAY.[1]

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In my opinion the charm of the practice of medicine is its ever-changing face, and its greatest difficulty is the evaluation of each new method of treatment evolved. I do feel that this enforced insularity of ours does to a certain extent isolate us from this charm and greatly adds to the difficulty of assessing new procedures. These difficulties can be overcome only by the more frequent interchange of ideas, both among ourselves and with practitioners from overseas. It has been our custom in Tasmania during the past decade to invite Australian lecturers to our midst at repeated intervals, and with them to discuss the problems of modern medicine; but I feel that we still experience a privation in not being able to discuss changing ideas with practitioners and specialists from other continents. In some cities on the mainland post-graduate lecturers from overseas are regularly invited to speak, and it appears to me that with very little difficulty our Branch council might invite these overseas lecturers to visit Tasmania also, and exchange with us their viewpoints of medicine. But if these overseas lecturers are expected to give, they will expect to receive in some measure our advice and opinions. I feel that the general standard of medicine in Australia is on a particularly high level; yet it has not, taking it from all points of view, a very stimulating action. This I find is rather characteristic of medicine throughout the British Empire; for we are too ready to allow other countries to take the initial step, and when the pioneer work has been concluded then to accept the germinating idea and attempt to improve on it. If you will discuss the trend of English and American medicine of today with Australian post-graduate students who have recently been abroad, you will be surprised how universal is their high opinion of the stimulating influence of American medicine, as compared with that of the British school.

While I was abroad recently, I tried to determine what were the features of American medicine which made it so vital and refreshing; and after discussion of the problem with my friends we decided that there were several factors which contributed. First, expense for equipment in America is scarcely considered. It is a trite saying that a bad workman blames his tools; on the other hand, if one has not first-class equipment one cannot perform the best work. I have never seen more perfectly equipped ophthalmic hospitals than exist on the Atlantic coast of America; and these have all been completed since my previous visit there seven years ago.

The second factor, I think, is the development of specialties within specialties. I am certain at least that this is one of the main attractive features of American ophthalmology. For instance, at the Eye Institute of the Presbyterian Hospital in New York, where some dozen ophthalmic surgeons work, one surgeon takes special interest in ophthalmic X ray work, another one in ophthalmic photography, a third in aniseikonia (unequal retinal images), a fourth in keratoplasty; and each endeavours to solve some problem of that branch of his specialty.

The third factor which we thought attractive was the fact that well-paid, permanent medical staffs were fully employed at many of the hospitals. These men are not weighed down with excessive routine work, and are given abundant facilities for carrying out their favourite hobbies in medicine. (This definitely proves a disadvantage to men in practice, but has been largely overcome by the establishment of post-graduate schools.)

The fourth factor was the encouragement these men received in publishing their findings, and the care given in editing these works. Complete libraries, translations and editors are all at their

[1] Read at a meeting of the Tasmanian Branch of the British Medical Association on May 10, 1938, at Hobart.

disposal, as well as individual lock-up offices attached to these libraries.

The fifth factor is the magnificent system employed for filing and recording medical records, and the experienced statistical staffs engaged in coordinating these findings and tabulating the results. At the Mayo Clinic at Rochester no less than twenty-six statisticians are kept fully engaged in this work. They can, at a moment's notice, inform you of the number of patients suffering from cataract they had from Texas, California, Peru, the Argentine, during the previous or any year. The age factor, sex factor, occupational trend, and a wealth of detail, all so vital to the understanding of any disease, are available at a moment's notice.

I have no hesitation in saying that between my visits to England and America in 1930 and 1937, American ophthalmology has left Australian and English ophthalmology behind. I have come to the firm conclusion that Australian ophthalmology, in order to keep pace with that of our cousins on the other side of the Pacific, must undergo certain radical changes soon. The newly formed Ophthalmological Society of Australia (British Medical Association) is endeavouring to cover this ground.

Having criticized our methods, let me make one or two concrete suggestions: first, that considerably more money must be available for hospital equipment and buildings. Our hospitals must be modernized. A haphazard scheme is being carried out to modernize our public hospitals in Australia; but our private hospitals are far from ideal, and in many cases unfit for adequate treatment of the sick. Secondly, the honorary system prevailing in Australia could be abolished with advantage, and adequately paid and competent men should be placed in charge of the various departments of the public hospitals and allowed adequate time for clinical research. Thirdly, better facilities should be given these men for publishing their results, and better library facilities should be available. Fourthly, post-graduate schools of medicine should be established in each capital city of Australia.

With such improved circumstances it is certain that Australia will be able to contribute its share of original work, and that the exchange of ideas between our continent and others will not be entirely one-sided, as it appears to be at the present moment.

And lastly, I would suggest a coordinated scheme of post-graduate study in Tasmania. I feel that a permanent post-graduate committee, consisting of representatives of the British Medical Association (Northern and Southern Divisions), of the colleges of surgeons and physicians, and of other intramural and extramural associations, should be formed. The present happy-go-lucky scheme has outlived its useful purpose. The Government is insisting on its medical officers doing four weeks' post-graduate study each year, and we must help in adequately providing facilities for this.

And now to deal with specific observations made abroad on certain advances in ophthalmology.

Retinal Vascular Diseases.

The first subjects I shall mention tonight are those of arteriosclerosis and diabetes. While at the Mayo Clinic I had a most interesting discussion with Dr. Wagener, who for many years has devoted his entire time to observing changes in the retina occurring as complications of medical diseases, and I think there is no doubt that he is the world's greatest authority on the subject. He told me that he had come to the conclusion that arteriosclerosis passes through an angiospastic stage, leaving in the fundus and in other parts of the body constriction of the arteries and arteriovenous depressions. At the conclusion of the angiospastic stage the blood pressure may return to normal, pronounced retinal arterial changes being left in the fundus. If the angiospastic stage does not cease, the blood pressure may fall; and the result is massive retinal exudates. To me this is the most interesting point; for on many occasions I have referred patients with pronounced retinal arteriosclerosis to their physicians, to be astounded by the fact that they have a normal blood pressure. Undoubtedly these patients have been through their angiospastic stage, and have regained a normal blood pressure; but the trauma has left definite angiospastic evidence in the retina.

Another interesting fundus question mentioned by Dr. Wagener was diabetic retinitis. Dr. Himsworth, of the University College Hospital, is of the opinion that diabetic retinitis is not dependent on arteriosclerosis or nephritis, as Foster Moore suggested. He thinks there is some association between a low carbohydrate diet and diabetic retinitis. Therefore he treats all his patients on a high carbohydrate diet, with encouraging results. Dr. Wagener, at the Mayo Clinic, is of the opinion that diabetic retinitis seldom clears up. He could give no explanation, but confirmed my opinion that in patients with diabetic retinitis it was most unusual to find the condition clear up entirely, however successfully the hyperglycæmia was treated. I do not want you to think, as a corollary to this, that it is useless treating diabetic retinitis; adequate treatment will eliminate a great deal of retinal damage.

Aniseikonia.

The second condition I shall mention is something which non-ophthalmologists may consider a little abstruse and too technical. It is a condition known as aniseikonia, or inequality of the retinal images. We have known for many years that patients with pronounced differences of the refraction of the two eyes could not wear their correction comfortably on account of inequality of the retinal images. This has been most apparent in patients with cataract who have normal vision in the eye upon which no operation has been performed. Work recently done by the American Optical Company at Southbridge, Massachusetts, revealed the fact that some patients with almost normal refraction have dissimilarity in the size of their retinal images, and that these patients are very prone to eye strain and to suppression of the image in one eye. Further, they

have found that many patients with squint have unequal retinal images, especially those who have persistent suppression. They have devised means of correcting this irregularity; and if their research is confirmed, there is every hope that this bugbear of orthoptics will be generally eliminated.

I had the opportunity while in New York of receiving a short test myself on one of these diagnostic instruments for estimating the size of the retinal image, and was most impressed by the fact that when the size of one of my retinal images was disturbed, I was unable to control the testing machine. At the moment the work is entirely in the experimental stages, but it may prove to be a great assistance in our work with strabismus patients and with those suffering from eye strain who are not relieved by ordinary methods. Unfortunately these ophthalmo-eikonometers are not available outside America at the present moment; but Dr. Gordon Bruce, of the New York Eye Institute, told me that they were finding their apparatus of definite assistance in their work on eye strain alone, and that it was producing most happy results in selected cases.

In England I found Dr. Dallos (technical adviser to Messrs. Theodore Hamblin Limited) working on the same subject, but from a different angle, namely, with contact lenses; but his experiments had not reached such an advanced position as those at Southbridge.

Extraction of Cataracts.

In every clinic which I visited there seemed to be a vicious debate proceeding regarding the merits of intracapsular extraction of a cataract. It appeared to me that when oculists (like the surgeons of India) had hundreds of cataract extractions a year to perform, by constant practice the intracapsular method would become the most satisfactory. Yet at Moorfields Eye Hospital in London, where a great many cataract extractions are done, very few of the men will consider for a moment the intracapsular method, and most still perform the extracapsular operation. Moorfields men said that while they admitted that the intracapsular method had a definite advantage, in that it reduced cataract extraction operations from two procedures to one, yet unless each surgeon performed a hundred or more such operations each year, the intracapsular method would not be a safe one to advocate universally or to teach to students. I think this is the general opinion throughout the world, and one in which I concur. It cannot be denied that the safest operation must produce the most satisfactory results. I think that when the technique of intracapsular extraction has been simplified and the dangers have been removed, it will ultimately become the operation of choice. And it is to the surgeons of India and other countries where cataracts predominate, that we look to clear the technique of pitfalls and provide their less fortunate colleagues with a clear path to follow.

Cinematography in Medical Education.

The next subject I want to speak to you about is that of colour cinematography in medicine, and especially in ophthalmology. To teach students ophthalmic surgery successfully has been a great difficulty for many years, in so much that only two spectators at the most can see clearly what is happening at an ophthalmic operation. In America they have overcome this difficulty largely by colour films of eye operations, with which they teach their students. I was most impressed by the clarity and natural colouring of the films, and I certainly agreed that to teach ophthalmic surgery *en masse*, cinematography had every advantage over long probation in a theatre. Many technical difficulties have had to be overcome to photograph the actual operations adequately; but to a great extent these have been mastered. I am only sorry tonight that I am unable to show you one of their masterpieces in motion picture technique.

Contact Lenses.

In London at the present moment a great deal of work is being done on contact lenses. You have probably all heard about the glasses that a patient can wear inside his eyelids. They have been on the market on and off for about fifty years. For the past ten years Zeiss and Company, in Jena, have sold trial sets of contact lenses which have to a certain extent proved superior to others available; but they have certain disadvantages. Dr. Dallos, of Budapest, has been experimenting for some years past in a new technique. Firstly, an impression is taken of the eye, similar to that taken by a dentist of the gums, and from this is built up a glass contact lens which should fit the cornea and sclera with accuracy and comfort. So impressed were the London surgeons with Dr. Dallos's work that they persuaded the firm of Theodore Hamblin to invite him to London as their technical adviser. He is now permanently residing in London, and a contact lens clinic has been established in Cavendish Square. The work is still very much in the experimental stage, and I think it will be at least another three or four years before the major difficulties are mastered entirely. At present it is still possible with the old Zeiss contact lenses to restore normal vision to patients with conical cornea and other corneal irregularities. It is hoped that when Dallos has perfected his technique other types of patients, such as those with aphakia, high myopia *et cetera*, will be able to wear contact lenses also with great advantage, and with as great comfort as ordinary spectacles lenses. Dr. Ida Mann, one of the senior surgeons at Moorfields Hospital, is one of the prime movers in this new contact lens clinic, and I cannot too warmly express my gratitude to her for expounding to me the intricacies of this new method. Those who are eager for more detailed information I must refer to an article on this subject from the pen of Dr. James Flynn. It will appear shortly in *The Australian and New Zealand Journal of Surgery*.

Corneal Grafting.

Both in London and in New York grafting of the fresh human cornea is proceeding apace. I was fortunate enough in London to see fourteen of Mr. Tudor Thomas's patients, and in New York Dr. Castroviejo showed me two of his. There is no doubt that the work these two men are performing is outstanding. It is the greatest advance in ophthalmology since Gonin devised his operation for the cure of retinal detachments. In London Tudor Thomas is transferring the cornea from one adult to another, while in New York Castroviejo is using the corneæ of stillborn infants. I did not have an opportunity of seeing the final results of Castroviejo's work; but I did see the final results of Tudor Thomas's, and I must admit that some of them were remarkably good. One medical practitioner's widow, with whom I had quite a lengthy talk, had been blind for ten years. After one corneal grafting operation her vision was $^{6}/_{9}$; and hers was not an exceptional case. It is an outstanding piece of pioneer work, and a review of Castroviejo's publications will appear in *The Australian and New Zealand Journal of Surgery*.

The Use of Foreign Protein.

The injection of foreign protein in ophthalmic cases has been advocated for many years by numerous observers of various types of maladies, but it is the general consensus of opinion that foreign proteins used in infantile and adult gonococcal infections of the eye are of the greatest help. At Professor Vogt's clinic in Zurich, which I visited, they prepare the milk by heating it to 60° C. for ten minutes, and then boiling it for one minute. They give infants two cubic centimetres, and adults ten cubic centimetres. Both, they say, cause a quick rise in temperature.

In San Francisco, where I discussed the matter with Dr. Greiger (chief medical officer of health), they are reported to be curing all patients with *ophthalmia neonatorum* in just over a week. Their technique is to inject intravenously through the anterior fontanelle *Bacillus typhosus* vaccine, in doses of 10,000,000 organisms, the dose being increased by 1,000,000 organisms each day for at least four days or longer, according to the clinical and laboratory findings. Adrenaline, in a dose of 0·12 cubic centimetre (two minims), is injected intramuscularly before each injection of vaccine. My experience in Hobart in gonococcal ophthalmia has been that babies give a very poor response to milk injections, while adults have a rapid rise in temperature, with pronounced improvement of the ophthalmic condition. I reported my experience in The Medical Journal of Australia in June, 1935. It is my intention, when an opportunity arises, to try the San Francisco method; but fortunately the number of cases of *ophthalmia neonatorum* in Tasmania seems to be decreasing. There is no reason why, with the prophylaxis recommended by the Rotunda Hospital, it should not be entirely eliminated. I found that foreign protein was advocated by Professor Vogt not only in *ophthalmia neonatorum*, but also in iritis in adults; while Dr. Prangen at the Mayo Clinic orders milk injections in all severe post-operative eye reactions.

Prophylaxis in Ophthalmia Neonatorum.

While I am on the subject of *ophthalmia neonatorum* I should like to say one or two words about prophylaxis. I was fortunately invited to Dublin by Mr. Somerville-Large, who is the honorary ophthalmic surgeon to the Rotunda Hospital. He was good enough to explain to me in detail the prophylaxis carried out there, and he told me that in the last 5,000 deliveries at that hospital only one case of *ophthalmia neonatorum* had occurred. This is certainly an outstanding result. He attributed it not to any antenatal treatment of the mother, but to careful prophylaxis at the birth of the child. Their technique in the Rotunda Hospital is as follows. Each eye is swabbed with a separate dry swab immediately the head is born. A 1% solution of silver nitrate is instilled into both eyes as soon as the child is born, and if the mother has a vaginal discharge the instillation of a 1% solution of silver nitrate is repeated after the baby is bathed. Mr. Somerville-Large also stressed the facts that the silver nitrate must be replaced at least once a month, and that it must be kept in a special bottle so that it cannot be confused with any other drug in the armamentarium of the obstetrician. He further impressed on me that a 1% solution of silver nitrate was quite sufficient, and that a 2% solution was liable to produce a traumatic conjunctivitis. On January 1 of this year I put the babies of the non-paying patients at the Queen Alexandra Hospital for Women on the Rotunda technique, and so far this year I have not been called to see one case of discharging eyes in an infant at that institution. A recent pamphlet issued by the National Society for the Prevention of Blindness in New York graphically depicts the following facts. In 1907, 28·2% of the new admissions to blind schools in the United States of America were children blind as the result of *ophthalmia neonatorum*, while in 1935 this percentage had dropped to 7·4, which is a 76·2% reduction. They attribute this decrease almost entirely to adequate prophylaxis at birth.

Operating Theatres in Ophthalmic Hospitals.

The next subject I should like to discuss is that of operating theatres in ophthalmic hospitals. The most perfect ophthalmic operating theatre I saw in Great Britain was a new one, which has recently been built at the Maidstone Eye and Ear Hospital in Kent. Mr. W. E. Heath kindly showed me over this in detail, and I must say that with one exception it is ideal. The lighting has been specially designed to prevent all dazzle; all the electric switches are under the operating table, so that no cords are lying loose for nurses and surgeons to trip over. Air cushions have been let into the floor to prevent noise and relieve the surgeon's feet; and the only improvement I could have suggested

was the installation of an air-conditioning plant to keep the atmosphere at an ideal temperature for both the patient and surgeon. This is a point I should like to stress very emphatically. How can our surgeons be expected to give their best work in the atmosphere they work in in our theatres in Australia? Often the surgeon has a nurse continually at his side, mopping the perspiration from his brow. Further, can a patient be expected to respond satisfactorily after an operation which has been performed in an atmosphere similar to a Turkish bath? The comfort in which the American surgeons work in their air-conditioned theatres is to me an essential, not a luxury. At the Eye Institute in New York, to make the air-conditioning effective the students' gallery is completely glassed off from the rest of the theatre, and binoculars are supplied to each student to view the operation under magnification. I am not sure that the binoculars are absolutely necessary, in view of the proficiency of colour cinematography, but I do feel that the air-conditioning had everything to recommend it. But to speak of air-conditioning in Tasmania seems a little out of place, when we remember that some of the hospitals in Hobart have not even an electric refrigerator to assure fresh and cool food to their sick.

Orthoptics.

London is certainly the home of orthoptics, and very good work is being done both at the Royal Westminster and the Central London Ophthalmic Hospitals. Not only are they now treating children with strabismus, but also adults with eye strain; and so impressed was I with the high standard of their work and the ability of their qualified trainers, that I engaged a trained orthoptist, who is now working for me in Hobart. It is becoming more and more apparent that children with squint treated by exercises and operation obtain far superior results to those treated by operation alone. This was made most evident at the recent meeting in Sydney of the Royal Australasian College of Surgeons, at which Dr. Ringland Anderson, of Melbourne, told us of the effect of closing the orthoptic clinics during the infantile paralysis epidemic in that city. Also it is becoming more and more apparent that many adults suffering from eye strain are suffering from muscle imbalances and not from refractive errors. It is to these patients with muscular imbalances, who have wandered from optician to oculist and back again, attempting to get relief through spectacles, that orthoptic exercises are proving so beneficial. At a later date I hope to have more to say on this subject.

Prostheses.

The firm of Clement Clarke Limited, of Wigmore Street, have placed at the disposal of ophthalmic and general surgeons their new department for the production of prostheses. New eyes and lids, noses, fingers, ears and breasts all come within their scope, and the artistic results are extraordinarily lifelike. Of course, a colour matcher and a measurement chart are necessary to determine the requirement in each case; and with these essentials prostheses can be satisfactorily ordered at any distance from London.

Retinal Detachments.

I made a special journey to Zurich to see Professor Vogt's work on retinal detachments. He is now using electrolysis with astoundingly good results. It is asserted that his results are almost 100% satisfactory. I somewhat doubt this high figure, but the cured patients whom I saw at random in the out-patient department were certainly highly satisfactory. His method of localization and operation were extremely tedious, taking anything from three to four hours, and necessitating great patience on the part of the patient and surgeon. In England oculists appeared to be trying various types of operations for retinal detachments, and their percentage of cures is still below 50% as far as I could ascertain. I think even in Australia we can exceed this figure. I procured the necessary apparatus for Professor Vogt's operation, but since I returned to Tasmania I have not seen one single retinal detachment. Perhaps the Tasmanian retinæ are too fearful of the prospect in view. Reviewing the position generally, it appears that a skilful surgeon should now be able to obtain from 60% to 70% of cures in retinal detachment operations. This is excellent, considering that ten years ago the successful results from operation were 0·1%.

Radium and Eye Diseases.

Entirely owing to the kindness of Sir Hulbert Waring I was able to see at the Radium Institute, London, a considerable collection of eye diseases treated by radium. Dr. Roy Ward was good enough to explain to me the technique and show me coloured drawings of each case through its various stages, and the patient with the final result. They are there using unscreened five-milligramme radium plaques for spring catarrh, Mooren's ulcers, carcinoma and sarcoma of the conjunctiva and cornea, rodent ulcers of the lids and other precancerous conditions. It has been recognized for some years now that screened radium applied near the eye will produce a cataract in that eye, which cataract reaches maturity about three years after the treatment. With the unscreened radium applied for short periods at the Radium Institute no such unhappy consequences have occurred for many years. I was also fortunate while in London to see the 1,000,000-volt deep therapy plant that has been installed at Saint Bartholomew's Hospital, and on the same day to see the Beam therapy plant at the Radium Institute in London. The results in both general and surgical cases seemed to be encouraging; but nothing had been done in the treatment of ophthalmological conditions by these two methods. At Saint Bartholomew's Hospital, Foster Moore has been doing extraordinarily good work on malignant tumours of the retina and chorioid, by inserting radon seeds into the growth, with pro-

nounced improvement and in several cases complete cure of the condition.

While discussing the subject of radium, I should like to mention Lindau's disease, which, with tuberous sclerosis of Bourneville and von Recklinghausen's disease, has been called by Van der Hoeve phakomatosis. All three have ophthalmic signs and symptoms, but the one of major importance is Lindau's disease, in which angiomatosis of the retina is a common complication. Stallard, in his Gifford Edmond Essay for 1932, described one case of W. G. Heath's, of Rochester. The patient was treated with radium, and Stallard thought at that time that she had reacted very favourably to the treatment. Subsequently, however, the girl developed complicated cataracts, which could not be extracted satisfactorily, and she is now blind. Humphrey Neame, in London, has recently been treating *angiomatosis retinæ* with electrolysis, much after the manner of Vogt for retinal detachment. Although it is too early to dogmatize, the results apparently are encouraging. But when one views the progressive nature of the disease in the cerebellum and other sites of the body, it seems doubtful whether surgical treatment will be of any great help in staying the progress of the lesion in the retina, especially as Van der Hoeve has proved conclusively in his Doyne Memorial Lecture in 1932 that many of the phakometoses are inherited diseases.

Skin Diseases in Ophthalmology.

Skin diseases in ophthalmology have always interested me, and while I was abroad I had the opportunity of seeing three types of skin disease with ocular complications. The first was angioid streaks of the retina and *pseudoxanthoma elasticum*, the second was *neurodermatitis chronica* with complicated cataracts, and the third was pemphigus of the conjunctiva. It seems extraordinary that angioid streaks have been known to ophthalmologists since Doyne described them in 1889, that Darier described *pseudoxanthoma elasticum* in 1894 and yet that the interrelation of the two diseases has only just been revealed in Holland by Goedblood. Ophthalmologists looked at the fundus and never stripped the patient to examine the neck and chest, and dermatologists examined only the neck and chest and never looked at the retina; and so for forty years the correlation of the two diseases has been unrevealed. A proliferation of the elastic lamina both in the chorioid and in the skin accounts for the dual condition.

Neurodermatitis chronica I was fortunate enough to see at the Zurich clinic, and they were very hot on the trail of the disease in America. This seems to be an inherited disease occurring in late adolescence and chiefly affecting males. It is often accompanied by bronchitis, and exacerbations occur after certain proteins are eaten. The condition resembles eczema, and is worse on the flexures of the arms and legs. Complicated cataract supervenes and rapid maturity results. Extraction of the cataract is often followed by iridocyclitis, so that the visual outlook is particularly poor. It appears to me extraordinary, when we remember that the lens is embryologically an offshoot of the epidermis, that it is not more often affected by other dermatological conditions. Cases of this condition have occurred in Australia, and Dr. A. L. Tostevin, of Adelaide, will report one shortly.

One word with regard to pemphigus, which, when it attacks the eye, usually results in blindness. I had the opportunity three years ago of seeing a patient of Dr. Tostevin's, of Adelaide, whom he had taken to Melbourne for consultation. I saw the patient again last August. No treatment, either before or after the consultation, proved of any avail until he commenced to instil "Halivol" into the conjunctival sac; and from then onwards the condition of the better eye improved, with the result that the man had some useful vision left. This use of vitamin preparations locally for certain eye conditions has been tried during the last two or three years with definitely helpful results. Since I have been using them in Hobart I have found at least one patient who exhibited quite a severe skin reaction from the use of the "Halivol" drops in the conjunctival sac; but this should not deter one from pursuing the treatment, as the skin condition seemed to clear rapidly on cessation of treatment. Exactly how the vitamin preparation reacts in the conjunctival sac has not been determined, but it probably improves the nutrition of the part and encourages repair.

X Ray Diagnosis in Ophthalmology.

The diagnostic use of X rays in ophthalmology has been elaborated at the New York Eye Institute by Dr. Pfeiffer, who has devised a new and simple localizing apparatus, using the Comberg lenses, and taking antero-posterior and lateral exposures with two tubes instantaneously. He is also investigating abnormalities of the optic foramina, which may reveal some interesting facts in certain cases of unexplained retrobulbar neuritis and traumatic atrophy of the optic nerve. His work on X ray diagnosis of glioma of the retina is most enlightening. At the Zurich clinic work on bone-free radiology for intraocular foreign bodies, dental films being used, has proved most satisfactory. In Philadelphia, Spachman has been elaborating the technique of injection of air into Tenon's capsule to confirm the diagnosis of double perforation of the globe.

Conclusion.

I am afraid I have kept you a long time this evening; but I hope I have shown you, in as simple language as possible, that ophthalmology is making very rapid strides in many directions, and that with it the percentage of blindness throughout the world should rapidly diminish. While in Paris I had a most interesting talk with Dr. Churchill, Secretary-General of the International Association for the Prevention of Blindness, and she is most anxious that Australia should join up with that organization. Unfortunately in Australia we have no society

for the prevention of blindness; but at a recent meeting in Sydney of the newly formed Ophthalmological Society of Australia (British Medical Association) one of the first subcommittees appointed was to deal with sight-saving and prevention of blindness in Australia. The International Association for the Prevention of Blindness in Paris has just issued a 280-page report on "The Number of Blind, and the Protection of the Eye in Different Countries of the World". In it a two-page abstract appears of Counsell's and my survey of the causes and prevention of blindness in Tasmania in 1936. I am sure the association would help us in every other possible direction if invited.

Those who have read Bishop Harman's four-yearly surveys of ophthalmic disease in Great Britain will have noticed that at least 30% of patients suffering from eye complaints have conditions other than refractive errors. This fact should be brought to the attention of all physicians. I feel that if this were done a considerable amount of the prevailing blindness in Australia would be eliminated. It is my hope that some day in Australia we shall have an association with as active a personnel as the National Society for the Prevention of Blindness in New York. This body is doing the most outstanding work in compiling statistics and carrying out propaganda in every direction. Other countries must find the need for such an organization. This society's work is most stimulating. Their statistician, Miss Kirby, has also offered to afford us every possible help in Australia. In Australia 50% of the blindness should, and could, be stamped out by the united effort of not only oculists but the whole medical profession.

The expense of caring for the blind has developed to enormous proportions in England. The National Institute for the Blind in London is doing magnificent work. A visit to their printing press, massage rooms, school commercial classes and talking book demonstrations makes one at once realize that the care of the blind is a full-time job. I found our Tasmanian Institution for the Blind and Deaf comparing very favourably with those abroad; but I look forward to the day when, with your cooperation, at least the blind school at our institution will have vanished. It is a definite possibility.

Reports of Cases.

A CASE OF TORSION OF CYST OF THE EPOOPHORON.

By Godfrey Harris, M.B., B.S.,
Flinders, South Australia.

Ovarian cysts, complicated and otherwise, are, of course, a matter of everyday surgical experience; but the occurence of strangulation in a parovarian cyst in a young woman is unique in the writer's experience; nor have I seen a similar specimen in the pathological museums.

The patient, an unmarried woman, aged twenty years, was awakened at night by agonising pain in the right iliac fossa of the abdomen. I saw her shortly afterwards. Her appendix had been removed four years previously for a similar, but less severe, attack. Otherwise there was no relevant history. She was obviously in severe pain, lying prostrate and in a state of shock. There was acute tenderness in the region of her abdominal scar, externally and internally. Her menstruation had been regular and she was in the intermenstrual period. There were no alimentary or urinary symptoms or signs.

I performed laparotomy, expecting to find a loop of bowel strangulated around an adhesion in the region of the old scar. A tense, purple cyst, similar in size and appearance to a common purple plum, presented itself. The ovaries and adnexa being normal, I removed the cyst and the patient made an uneventful recovery.

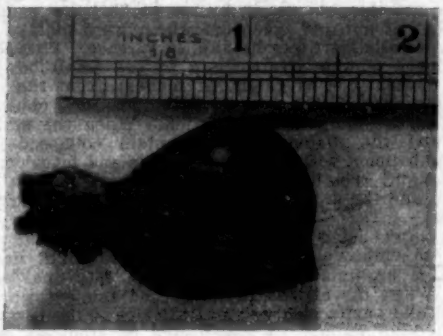

Figure I.

Photograph of the parovarian cyst. The specimen is unilocular and deep purple in colour.

Comment.

This structure is of interest developmentally. From the position of attachment of its pedicle to the broad ligament between the ovary and the ovarian fimbria of the uterine tube, and its character, a sac of mucoid material, it is obviously one of the tubules of the epoophoron. The epoophoron and its duct are vestigial homologues of the efferent ducts of the testis and epididymis from the Wolffian body.

I am surprised that the actual strangulation should have apparently taken place while the patient was asleep.

TORSION OF MECKEL'S DIVERTICULUM.

By Felix Arden,
Medical Superintendent, Adelaide Children's Hospital, South Australia.

History.

A boy, aged five years, was recently admitted to the Adelaide Children's Hospital. He had been awakened twenty-four hours previously by acute abdominal pain located just below and to the right of the umbilicus. The pain had been continuous and had not changed its position since the onset. Vomiting had begun at once and had been repeated several times. All food was rejected. The bowels had acted at first but not subsequently, in spite of an aperient. Micturition was rather painful, but not frequent. The mother remembered a similar but less severe attack two months before, as well as several mild recurrences.

The child was flushed and alert, with a temperature of 38° C. (100·4° F.). The pulse rate was 120 beats to the minute, and the respiration numbered 28 to the minute. His tongue was lightly coated and his breath was offensive. The abdomen moved freely with each breath, but slight

rigidity could be felt on either side below the umbilicus. He complained of tenderness in the right iliac fossa and to a lesser degree in the left iliac fossa as well, but no hyperæsthesia was present. Rectal examination elicited tenderness high up in the middle line.

In the expectation that acute appendicitis would be found, the abdomen was opened through a gridiron incision. However, the appendix when delivered looked so innocent that I was constrained to explore further, especially as there had been a few flakes of fibrin and a little exudate in the vicinity. A mass the size of a small egg was felt deep down in the abdomen towards the middle line. When this was brought to the surface and unravelled we saw a Meckel's diverticulum 3·75 centimetres (one and a half inches) in length, acutely inflamed and almost gangrenous. The base of the diverticulum had been twisted through two complete turns. It formed a sort of pedicle, and completely obstructed the lumen and the blood supply. The distal end had no attachments except by recent fibrinous exudate to the loops of gut and omentum which were plastered over it. The walls were purple and very tense. The point of attachment of the diverticulum to the small bowel was about 45 centimetres (eighteen inches) from the caecum and adjacent to the mesenteric border, not opposite it, which is the more usual situation. When the stalk was untwisted the distended diverticulum collapsed like a deflated balloon, with the escape of gas and faecal material into the gut. The base of the diverticulum was ligated and severed and the stump was invaginated with a purse-string suture.

The bowels acted once next day, but the child had already begun to vomit, and by the end of forty-eight hours he presented an unmistakable picture of intestinal obstruction. When the abdomen was opened the gut was found kinked and partly obstructed at the site of the invaginated diverticulum stump. A side-to-side anastomosis of loops above and below this spot relieved the obstruction, but not without some soiling of the peritoneum with intestinal contents.

Peritonitis ensued, and for the next four days the child vomited repeatedly and expelled all fluid given by the rectum. He was kept alive by a continuous intravenous drip of half-normal saline solution with 5% glucose, and received in all just over five litres of this solution intravenously. On the fifth day after the second operation he began to improve, and subsequently made a good recovery.

Comment.

The lesson to be learned from this case is that it is unsafe to constrict part of the wall of the small gut with a purse-string suture. A side-to-side anastomosis should have been done on the healthy bowel at the first operation.

Acknowledgement.

I am indebted to Dr. L. A. Wilson for permission to publish this case.

A CASE OF RECURRENCE FOLLOWING SUPRAPUBIC PROSTATECTOMY FOR BENIGN HYPERTROPHY.

John L. Watt, M.S. (Sydney),
Tenterfield, New South Wales.

Clinical History.

P.L., aged fifty-six years, was first seen by my father on January 25, 1933, at which time he complained of difficulty in passing urine of six months' duration. He gave a history of nocturnal frequency of micturition of slightly more than two years' duration. Rectal examination revealed pronounced hypertrophy of both lateral lobes of his prostate gland, of the soft type. His urine was acid, with a faint cloud of albumin but no pus or sugar. The systolic blood pressure was 220 and the diastolic pressure 120 millimetres of mercury. The operation of suprapubic prostatectomy was performed by my father on March 3, 1933, after two weeks of preliminary catheter drainage. The operation was performed according to the Harris technique, except that the bladder was drained, the prostate gland being removed intact. Microscopic examination revealed no trace of carcinoma. Convalescence was uneventful, and the patient was discharged from hospital one month later with the abdominal wound healed. Examination three months after operation revealed no difficulty in micturition and no residual urine. The urine was free of albumin and pus, and the blood pressure had fallen (figures not stated).

The patient returned, and I first saw him on December 6, 1937. He stated that he had passed blood in his urine on the previous day, the blood appearing at the onset of micturition, with slight bleeding *per urethram* after the act. There was no pain or difficulty of micturition, but nocturnal frequency of micturition had been present for the last two months. He had been sleeping badly for more than six months, and had been suffering a good deal from giddiness and headaches. The systolic blood pressure was 240 and the diastolic pressure 140 millimetres of mercury.

Examination of the urine revealed a moderately heavy cloud of albumin but no pus. On rectal examination a large, soft, prostatic tumour could be felt, the enlargement being of both lateral lobes, but more marked on the left side. There was no clinical evidence of malignancy. As all symptoms were recent and as there was no apparent difficulty in micturition, it was decided to pass a catheter and to estimate the residual urine; this proved to be 340 cubic centimetres (twelve ounces).

After considerable preliminary treatment, including twenty days of continuous catheter drainage, I performed suprapubic prostatectomy according to the Harris technique on May 9, 1938, but without primary closure of the bladder. The two enlarged lobes were shelled out with remarkable ease and were intact. No nodules were left. Later, microscopic examination failed to reveal any evidence of malignancy. There was no drainage by the suprapubic route, and the tube was removed in twenty-four hours. The indwelling catheter was removed on the tenth day. After this the patient passed urine naturally, and he was discharged from hospital on the twenty-first day after operation with the suprapubic wound healed and no difficulty in micturition.

At examination two months after operation all symptoms had disappeared. The urine still had a trace of albumin, but no pus. The systolic blood pressure had fallen to 180 and the diastolic pressure to 110 millimetres of mercury, and there was no residual urine.

Comments.

After a careful search of the literature at my disposal, the only reference I could find to recurrence of benign hypertrophy following suprapubic prostatectomy was an article by Kretschmer,[1] with a report of two cases. In his article the author insisted that certain conditions should be definitely established: (i) that considerable time should elapse between the operation and the onset of symptoms; (ii) that the present symptoms should really be due to a benign hypertrophy which has recurred, as proved by rectal and cystoscopic examination; (iii) that during the interval the patient should be free of symptoms; (iv) that after surgical removal the histological examination of the specimen should corroborate the diagnosis of true recurrence.

This case fulfils each of these conditions, although the symptom-free interval was considerably less than those of both of Kretschmer's cases, which were ten and twelve years. During the interval the patient was symptom-free. When the trouble returned the symptom was hæmorrhage rather than obstruction, although obstruction was present, as is shown by the residual urine. Clinically, the tumour was taken to be a recurrence of benign hypertrophy rather than malignant disease, on the following grounds:

1. The presenting symptom was hæmorrhage *per urethram*. Hæmorrhage as a presenting symptom is far more common in benign than in malignant prostatic enlargement, as pointed out by Berry.[2]

2. There was an absence of pain, which tends to be the more important symptom in malignant disease of the prostate gland, especially when it has reached the large size of this tumour.

3. The enlargement was soft and even, with no nodularity and with no fixation to surrounding structures.

In addition, the ease with which the gland was shelled out at operation was strongly against any possibility of malignancy. These observations were confirmed by my inability to find any malignant change microscopically.

According to Kretschmer, recurrences can be explained in one of two ways: (i) Difficulty may occur in the removal of the original tumour, so that the prostate can be removed only by a process of morcellement. This did not occur in this case. (ii) Recurrences may originate from small gland tubules in the layers of the capsule remaining in the prostatic bed. It would appear that this is the explanation in this instance.

This case is presented because there is scant mention of recurrence of benign hypertrophy in the literature, and practically none in the standard text-books.[2] Perhaps the possibility that recurrence of benign growth can and does occur, especially in relatively young individuals, is not generally appreciated; and some patients with recurrent prostatic tumour may be too readily labelled as suffering from malignant disease, when in actual fact the condition is benign.

References.

(1) H. L. Kretschmer: "Recurrence following Suprapubic Prostatectomy for Benign Hypertrophy", *Surgery, Gynecology and Obstetrics*, Volume LIII, 1931, page 829.

(2) N. E. Berry: *The Urologic and Cutaneous Review*, Volume XL, 1936, page 73 (quoted in "The Medical Annual" for 1937, page 368).

Reviews.

PRACTICAL BACTERIOLOGY.

THE ninth edition of the well-known text-book "Practical Bacteriology, Hæmatology and Animal Parasitology" has recently appeared.[1] The authors are E. R. Stitt, rear-admiral of the medical corps of the United States Navy, retired, and Paul W. Clough and Mildred C. Clough, of the Johns Hopkins University. The book is divided into four parts and is furnished with a voluminous appendix. Part I constitutes practically a complete discussion of the identification and the characteristics of pathogenic bacteria. In the first chapter there is a table of the diseases which may be contracted by man from domesticated animals. It is interesting that the list contains only twenty-four separate and commonly occurring diseases. One of the strange findings of immunology is the lack of susceptibility of one species of animal to the diseases of another.

The impression the reader obtains on searching the book for an account of those conditions in which he is particularly interested, is that the work is completely up to date. Practically no recent advance has been disregarded. For instance, mention is made of active immunization against tetanus by toxoid and against whooping cough by pertussis bacillus (phase I) vaccine, and of the new staphylococcal products, toxoid and antitoxin. The new methods of cultivating tubercle bacilli are also discussed. The authors state that after inoculation of tuberculous material on a favourable medium a diagnosis may be made by observation of the consequent pure culture within a few days.

The appendix to this volume includes 115 closely written pages and itself constitutes a complete hand-book for a medical bacteriologist and pathologist. It is accurate, well illustrated and practical. Towards the end a number of pages are devoted to a list of laboratory procedures which are useful in the diagnosis of human disease. An idea of the extent to which the medical man is now aided by efficient laboratory work may be obtained by a reading of this list and by a realization that in the diagnosis or treatment of not less than 160 common diseases the assistance of the laboratory worker is of the greatest value.

If a criticism of this excellent book may be offered, it is this, that the three subjects with which it deals have grown too large to be discussed in any one volume. In order that they may be included, much of the print has of necessity been reduced to an inconvenient size. Three chapters only have been spared for hæmatology, and though each is full of useful material, the impression gained is that the subject would better have been dealt with in a separate volume. The chapter on venomous snakes is devoted, naturally enough, to a consideration chiefly of those common in the Americas. It is therefore not of great value to those interested in Australian snake venoms and antivenenes.

[1] "Practical Bacteriology, Hæmatology and Animal Parasitology", by E. R. Stitt, M.D., Sc.D., LL.D., P. W. Clough, M.D., and M. C. Clough, M.D.; Ninth Edition; 1938. Philadelphia: P. Blakiston's Sons and Company Incorporated. Demy 8vo, pp. 974, with illustrations. Price: 42s. net.

PHYSIOLOGY OF THE EYE.

"STUDIES ON THE PHYSIOLOGY OF THE EYE", by J. Grandson Byrne, an interesting book of research first published in 1933, has been reissued with a new index and a supplementary account of the effects of cortical stimulation on the iris and *membrana tympani*.[1] It contains reports of hundreds of experiments initiated and performed by the author alone, except for the work on "functions of the cervical sympathetic as manifested in its action currents", in which Professor William Einthoven collaborated. Each topic is introduced by a brief survey of the literature. This is followed by a report of the author's experiments and a discussion of their significance. A summary of the findings and a bibliography conclude each chapter.

In the first part of the book, which deals with paradoxical pupillary phenomena following lesions of the afferent paths, the author states that "the functional relationship between the periphery and the pupil dilator mechanism through the sensory nerves is such that tissue injury of all sorts or degrees may cause inequality of the pupil". Lesions of the head, neck and upper extremity, and of organs whose afferent supply enters the spinal cord above the tenth thoracic segment are mainly associated with paradoxical pupil dilatation in the homolateral eye. Organs with an afferent supply reaching the cord caudad to this level are associated with the contralateral eye. Another conclusion is that the proprioceptive paths from the external ocular muscles run exclusively in the ophthalmic division of the fifth cranial nerve.

The second part deals with preliminary palpebral widening, paradoxical palpebral and lens phenomena and inherent tonus phenomena. The third part contains a description of various stimulation experiments made to determine the extent to which reciprocal innervation obtains between the affectivo-sympathetic mechanisms which mediate proptosis and palpebral, pupillary and lens widening, and the critical proprioceptive-parasympathetic mechanisms which mediate enophthalmos and palpebral, pupillary and lens narrowing. The significance of the results of the experiments is discussed.

The inherent constrictor tonus of the oculomotor nerve and the mechanism of ether narcosis, coma, sleep, the still reaction and allied conditions are discussed in the fourth part. Little is understood of the constriction of the pupils during sleep, coma and allied conditions, but the author endeavours to show that this constriction, as well as the conditions in which it occurs, including catalepsy, narcolepsy and hysteria, are release phenomena, like

[1] "Studies on the Physiology of the Eye: Still Reaction, Sleep, Dreams, Hibernation, Repression, Hypnosis, Narcosis, Coma and Allied Conditions", by J. G. Byrne; Reissue, with Supplement; 1938. London: H. K. Lewis and Company Limited. Royal 8vo, pp. 436, with 48 illustrations. Price: 40s. net.

decerebrate rigidity, with which it is closely related functionally and developmentally. Interesting descriptions of the death-feigning or still reaction of hibernation and of sleep follow. The author uses the still reaction to control restless children and animals.

The book gains coherence from a final summary which indicates the general neurological and psychological applications of the facts established by the experiments. The author discusses three stages in the development of the ocular effector mechanisms: the primitive type in which the activation is effected by chemical means; the intermediate or chemico-neural form in which the impulses are initiated in the related centre; and the higher level type in which the effector mechanisms are reflex and in which both afferent and efferent impulses are active.

The experiments described in the supplement indicate that the cortical areas stimulated do not govern isolated effects in the eye or the middle ear, and the author deduces interesting conclusions regarding reciprocal innervation and the action of various drugs.

The title of the book is somewhat misleading, for the author is interested less in the physiology of the eye than in direct and reflex nervous mechanisms exemplified in the innervation of the extrinsic ocular muscles, the iris and the ciliary muscle. No reference is made even to vasomotor effects in the eye. But within the province he has chosen, the author's research is meticulous and extensive, and his conclusions may suggest a new psychological approach to certain problems of general as well as ocular physiology.

PHARMACOLOGY AND THERAPEUTICS.

The second edition of E. Poulsson's "Text-Book of Pharmacology and Therapeutics" is to hand.[1] The first edition was published in Christiania, Norway. The second edition, which has been revised by Stanley Alstead, of Glasgow, is based upon the British Pharmacopœia of 1932 with the 1936 Addenum and on the United States Pharmacopœia, XI (1936). Many non-official remedies remain in the book, either on account of their intrinsic value or to make the book a useful work of reference.

The author observes that the classification of drugs varies in a multiplicity of ways, nearly every author elaborating a system of his own or merely following the alphabet. An unsatisfactory method is to arrange vegetable and animal drugs according to the natural families from which they are derived. One classification is the chemical, whereby the drugs are arranged in accordance with their position in the chemical system. It is pointed out that this method can be only imperfectly followed, as some drugs contain widely differing chemical substances and the active substances of others are not known with sufficient accuracy. Again, it is not always the purely chemical configuration that determines therapeutic effects. Thus mannite, which is an alcohol, belongs to the laxative substances and does not cause alcoholic intoxication. Yet a therapeutic classification is not the best. The author states that caffeine may be appropriately classified among remedies for diseases of the heart and kidneys. Diuretics embrace a heterogeneous collection of drugs which have only in common the property of effecting increased diuresis. In the pharmacological systems an attempt has been made to collect remedies in natural groups according to their characteristic or fundamental effects. For example, in the strychnine group are gathered those substances whose predominant action is to produce spasms by increasing reflex irritability.

The various divisions of the book are devoted to organic remedies acting specifically after absorption; organic substances acting locally; salts of light metals, alkalis, acids, halogens and oxidizers; heavy metals and metalloids; ferments and foodstuffs; and finally antitoxins and bacterial products. In the first division narcotics of the methane series are considered. The various hypnotics and anæsthetics are adequately dealt with, but the dangerous possibilities of these drugs are not sufficiently indicated. Not everyone will agree with the author's statement that the habit of addiction to diacetyl-morphine is more easily broken than the morphine habit. A paragraph on sarsaparilla is included and will well repay perusal. It deals with this and other "blood-purifying" medicines. The pharmacology of digitalis, strophanthus, squill and caffeine is admirably presented. The chaotic confusion which has hitherto marked the constituents of ergot is elucidated. Discussing zinc protamine insulin, the author insists that it must not be regarded as a substitute for ordinary insulin. The two are complementary. There is no mistake regarding the author's opinion concerning certain preparations from animal organs which he characterizes as "nothing but indiscriminate quack medicines". "Discussion", he says, "of these absurdities is superfluous."

One small criticism of the book must be made. As a matter of correct terminology, phenacetin and phenetidin should be spelled without a terminal "e" as they are not basic substances like morphine. Further, to classify the paraffins as "mineral fats" is not quite happy. Kamala, although eliminated from the British Pharmacopœia many years ago, finds a place in the book and is of special interest to Australians as it is indigenous to northern Australia as well as to other localities. The areca palm is also interesting to us since it is native to New Guinea. It furnishes an excellent anthelmintic against the tapeworm and is a constituent of the "betel" used for mastication by the aboriginal tribes. Arsenic is well described and its medico-legal importance is indicated. It is a constant constituent of the thyreoid gland and other organs in various mammals and in man. It has been found also in marine animals, who probably received it from sea water. According to Bertrand, eggs always contain arsenic. Excretion of the drug is effected chiefly in the urine.

The book is excellently presented and set up. The matter contained in it is temperately and thoroughly written. Nothing of importance has been omitted. The sheer merit of the work justifies a lengthy review.

[1] "Poulsson's Text-Book of Pharmacology and Therapeutics"; Second English Edition, thoroughly revised by S. Alstead, M.D., M.R.C.P.; 1938. London: William Heinemann (Medical Books) Limited. Royal 8vo, pp. 568. Price: 25s. net.

TREATMENT OF THE INFANT.

Written with treatment of the infant as its primary concern, Dr. Eric Pritchard's hand-book is designed for the general practitioner.[1]

Dealing with children up to the age of five years, the author has drawn upon his very wide experience as Medical Director of the Infants' Hospital. Detailed descriptions of diseases and of the course they run are omitted and only sufficient of the ætiology and pathology is given to supply the rationale of the treatment advocated. Only selected forms of treatment are described. In the main they conform to those approved by the majority of pædiatricians. There are, however, a number of new ones, certain of which appeal as being well worthy of trial. These include the use of tannic acid for sore buttocks, of thyreoid extract for prematurity, of long-continued dehydration for communicating hydrocephalus and (an old treatment revived) of creosote for tuberculosis. Many physicians will hesitate to accept the author's conception of the cause and treatment of pyloric stenosis. Again, he departs entirely from the usual and no doubt unsatisfactory methods of cure of cœliac disease. Fractures in the new-born are also dealt with on an entirely novel plan. While no mention is made of mandelic acid for the relief of pyelitis and while the dose of salicylate recommended in rheumatic fever is much less than is customary, there is much of great value in this volume and little that can be cavilled at. The chapters on the muscular system and on casualties and minor accidents are extremely useful. We must, however, express surprise at the great number of proprietary and patent preparations advocated throughout the book.

[1] "The Infant: A Handbook of Modern Treatment", by E. Pritchard, M.A., M.D., F.R.C.P.; 1938. London: Edward Arnold and Company. Demy 8vo, pp. 753, with illustrations. Price: 18s. net.

The Medical Journal of Australia

SATURDAY, OCTOBER 8, 1938.

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CONSTRUCTIVE MEDICINE AND NUTRITION.

"FOR the first time in the history of humanity, a crumbling civilization is capable of discerning the causes of its decay. For the first time it has at its disposal the enormous strength of science. The utilization of this knowledge and this power is our only hope of escaping the fate common to all great civilizations of the past." With these words did Dr. Alexis Carrel conclude his book "Man the Unknown".

Three years ago, at Geneva, at the instigation of the Australian representatives, the League of Nations Assembly made definite pronouncements concerning the importance of the nutrition movement in this utilization of science for the benefit of mankind. To give impetus to the movement in Australia, the Commonwealth Government appointed in 1936 an Advisory Council on Nutrition, a scientific body under administrative control, constituted primarily to conduct an inquiry into the present state of nutrition of the Australian people and to determine whether they are undernourished or whether their diet is improperly balanced. The final report of the council's investigations has recently been issued and a special abstract of the report appears in this issue.

Notable among the conclusions drawn from the results of the inquiry is the need of efficient public education in food values. The growing cost of medical care and the economic load which illness places on the community emphasize this necessity. Preventive medicine has been a Cinderella for many years; but the old adage that prevention is better than cure has now assumed an economic significance. The cost of medical care upon an individual basis has hitherto had its significance submerged; but now the cost is being stated on a community basis. The realization of the enormous costs involved in the provision of an adequate curative medical service will bring pressure to bear on the development of constructive measures which must tend to reduce these tremendous totals. It is this pressure which has brought into prominence such avenues of constructive medicine as physical education and the investigation of nutrition.

No attempt was made by the Advisory Council to determine the adequacy or otherwise of the purchasing power of the Australian people. It is obvious, however, that a vicious circle operates between lower standards of nutrition, on the one side, and efficiency, and therefore earning power, on the other. Similarly, the nutrition movement affects and is affected by innumerable and intricate social and economic relationships. In fact, the movement and its implicated problems strike at the very root of our civilization. For too long we have been building elaborate upper stories at the expense of the foundations of the structure of our civilization. It is realized that no significant advance in medical science can be made until those who practise it venture beyond what has hitherto been regarded as their proper sphere, and endeavour to control the human environment and to create, boldly and consciously, the conditions in which a healthy population can grow and flourish. Australia has valuable natural resources which many other

countries do not possess. But as a result of haphazard development and lack of constructive education, these resources have not been used to the best physical advantage of her people.

Even now, while economic experts strive to preserve the London market for Australian butter, the consumption of whole milk and cheese by Australians is little more than half the optimum amount; and while engineering experts develop a refrigeration technique which enables fruit and other perishable foods to be sold in competition with those of other countries on overseas markets, fresh fruit and milk are largely unobtainable in many parts of Australia for lack of adequate refrigeration and storage. It is not a sufficient protection for the future merely to discern the underlying causes of a civilization's decay. This is but a necessary step in combating that cause.

The Advisory Council has pointed to a cause of morbidity in Australia. This discovery is an important beginning; but the greater task lies ahead of us. Those responsible for the activities of the Queensland Nutrition Council have, in spite of economic disabilities, blazed a path of progress which the other States could follow with advantage. For the last three years they have anticipated the recommendations of the Commonwealth body, and have conducted an effective campaign in the Press, by wireless, by the cinema and by the education of professional groups.

The final report of the Commonwealth Advisory Council on Nutrition gives an Australian significance to the dictum of the Political and Economic Planning Committee in London: "Health is fundamentally a problem of research and education."

Current Comment.

PROTOFORMOTHERAPY.

A book with the rather strange title "Protoformotherapy in Treatment and Prevention" represents in considerably expanded form the substance of three lectures delivered by the author, Dr. N. E. Ischlondsky, at the University of Cairo, in March, 1936.[1] The term protoformotherapy may be summed up as meaning all that is implied in the internal secretions of embryonic tissues and their therapeutic importance when employed in practical medicine.

Ischlondsky states that he has adopted the synthetic approach to the consideration of biological phenomena after a process of painstaking analysis, and the whole trend of his writing seems to show that he is a practical laboratory worker well versed in the experimental method. He believes that protoformotherapy should be the aim of all treatment, since he considers that it stimulates the natural, protective capacities of the organism. He regards orthodox medical therapy merely as a restricted form of medical first aid; he has abandoned symptomatic opotherapy for what he defines as a basic organotherapy, and directs his treatment to the endocrine organs of the body rather than to the replacement of lacking hormones by their administration from outside.

Although the presence in the gonads of a specific hormone which determines the sexual constitution of an animal has been demonstrated, it appears that attempts to isolate the active principle in the laboratory have had meagre results; and Ischlondsky believes that at a given moment, including the moment of extraction, only small traces of active hormone are present in the gland. It is likely that far greater amounts of hormone, or hormogenic bodies, are stored up as prohormones and gradually transformed into the activating state according to the physiological needs of the organism. This mechanism of hormonic activation may be considered as a particular case of the wide mechanism of regulation which protects the animal against an exaggerated production of the whole range of biochemical agents which play their part in metabolism.

In searching for and attempting to isolate these activating substances, Ischlondsky premised the existence in large quantity of stimulating substances in embryonic tissues. He states that he has demonstrated their presence at the beginning of the fourth month of fœtal life and has successfully isolated them. His method involves a rapid desiccation of embryonic tissue and the extraction from the dried pulp of the active agents by organic solvents soluble in water. Fat, fatty acids and other accessory bodies of lipoid nature were excluded by filtration at low temperatures, so that all inactive fractions were removed. The stimulative substances so secured were combined *in vitro* with genital prohormones, and the action of the product was studied in a series of experiments carried out on rabbits and guinea-pigs.

Ischlondsky claims that by the injection of this preparation, which he terms the "incret", he has produced an increase in the quantity and an improvement in the quality of the blood, and has caused calcification and cicatrization of tuberculous foci. He has obtained the same results by using the embryonic incret alone without any addition

[1] "Protoformotherapy in Treatment and Prevention. Fifteen Years of Research on New Scientific Bases of Therapeutics."

of the genital ingredient. He and others have also carried out a long series of investigations in order to determine the influence of the incret upon the development of very young guinea-pigs, its action in arresting chronic degenerative changes in aged animals, and its equilibrating action in acute alterations of cellular metabolism in sick animals. From these observations originated his conceptions of the clinical application of his researches. He contends that they should form the basis of all preventive medicine; it is not too much to say that, in Ischlondsky's opinion, he can place in our hands an almost universal remedy applicable not only to the treatment (or prevention) of acute infections, but also to the "regenerescence" of aged tissues and to the campaign against cancer. In this latter regard, the figures which he supplies seem to show that there was an unusually small incidence of cancer amongst patients whom he had treated with doses of the incret for a wide variety of other diseases.

We cannot say from any indications given whether Ischlondsky's book is a translation from the French or whether the original lectures were delivered in English; but the volume contains a number of terms which will not be familiar to the average medical reader. Without attempting to assess the validity or invalidity of the writer's all-embracing conclusions, we may state that his book merits the consideration of workers in the biological field.

HYPOGONADISM ASSOCIATED WITH A PINEAL TUMOUR.

For many years it has been known that hypergonadism may be associated with a pineal neoplasm. It is now generally agreed that pineal tumours are rarely, if ever, the direct cause of precocious puberty and that hypergonadism associated with a pineal tumour is probably the result of a secondary diencephalic disturbance rather than of the pineal tumour *per se*.

In view of these accepted hypotheses concerning "diencephalic hypergonadism", it is of great interest to read the recent report by R. A. Cleghorn and others of a case of hypogonadism associated with invasion of the mid-brain and hypothalamus by a pineal tumour.[1] The history recorded is that of a young Englishman of twenty-three years who was admitted to the Toronto General Hospital. He stated that for a period of four years he had suffered from an uncontrollable sleepiness, a lack of initiative and some diminution of his mental alertness. For a year or more before his admission to hospital his appetite was enormous; he was never satisfied and would even eat until he vomited. Despite this consumption of large quantities of food he gradually lost weight. Immediately prior to his admission he was suffering from severe frontal headaches and incontinence of his bladder and bowel.

The patient, a poorly nourished boy, who appeared younger than twenty-three, was obviously perturbed at the lack of masculinity in his appearance. He had never shaved, his pubic hair was of feminine distribution, and although his penis was of average size, his testes were very small. He confessed to the practice of masturbation for many years and stated that his testes had gradually diminished in size since his seventeenth birthday. At the time of his admission to hospital there was some blurring of the margin of his right optic disk at its upper pole, and although there was no obvious limitation of his ocular movements, there was some variable latent diplopia apparently due to slight weakness of the left external rectus muscle. His visual fields were normal; his pupils were large and did not react to light directly or consensually, although they reacted on convergence. Examination of his lower limbs showed that he was unable to move his right leg, that the tendon reflexes of his lower limbs were present and equal but very sluggish and that the plantar reflexes were inconclusive. Radiographic examination of his skull revealed the pineal shadow in the mid-line; it was somewhat larger and denser than usual. Definite thinning of the posterior clinoid processes was also noted.

After a month in hospital the patient suddenly lost consciousness and died during a generalized convulsion. His physicians made a final diagnosis of "cerebral tumour involving the brain stem and extending forward into the hypothalamic region, with an associated internal hydrocephalus". At the autopsy a pinealoma which had invaded the hypothalamic region and the brain stem was discovered. There was an obstructive hydrocephalus of the third and lateral ventricles; the floor and anterior wall of the third ventricle were extremely distended and thinned and had caused some flattening of the pituitary gland by their pressure. Histological examination of the testes showed complete atrophy of the seminiferous tubules and hyperplasia of the interstitial cells. The adrenal and other endocrine glands were regarded as normal.

Cleghorn, Hyland, Mills and Linell have carefully analysed and discussed the various clinical signs and symptoms and their possible explanations. After consideration of the available clinical and experimental evidence they conclude that this unusual type of hypogonadism resulted from a disturbance of the nerve supply to the pituitary gland. It is suggested that the pineal tumour, directly or indirectly, caused destruction of sympathetic tracts in the mid-brain or of sympathetic centres in the hypothalamic region. Reasons are given for the belief that the consequent preponderance of the parasympathetic influence on the gland led to the discharge of an amount of luteinizing hormone relatively in excess of the secretion of the gametogenic, gonadotropic fraction, which was concurrently suppressed.

[1] *The Quarterly Journal of Medicine*, April, 1938.

Abstracts from Current Medical Literature.

SURGERY.

Cystic Hygroma of the Neck.

Emil Goetsch (*Archives of Surgery*, March, 1938) presents a detailed clinical and pathological study of twelve cases of cystic hygroma. In ten of these the growth involved the cervical region primarily, and in two the axilla. He reviews the literature and considers that the most acceptable theory of the ætiology of cystic hygroma is that it arises from sequestrations of lymphatic tissue. In cervical hygroma such sequestrations are derived from the primitive jugular sacs, which have failed to unite with the lymphatic system in the normal manner. Their potentiality of increasing in size to an almost unlimited extent is due to the fact that these lymphatic rests retain their embryonic power of irregular growth. Predisposing or exciting causes are not known. Symptoms may develop as a result of pressure on important structures, such as the trachea, the pharynx and nerve plexuses. Severe respiratory embarrassment may occur when the tumour extends into the mediastinum. Hygroma has a tendency to become secondarily infected. Hygroma is a benign neoplasm of lymphatic origin. It is a multilobular, multilocular cystic tumour, the cavities of which are lined by endothelium characteristic of lymphatic spaces. The fluid content is usually clear or straw-coloured, occasionally turbid or blood-stained. Histologically, the manner of growth and the development of hygroma are demonstrated by the presence of endothelial fibrillar membranes or sprouts from the walls of the marginal cysts penetrating the adjacent normal tissues. A lymph-like fluid is secreted within the fibrillæ, which are thereby caused to spread apart and canalize. Minute cysts with an endothelial lining are thus formed within these sprouts. By continued secretion within, the cysts enlarge, and by pressure atrophy of the walls between adjoining cysts the large cavities characteristic of hygroma are formed. Muscle fibres, nerve or other tissue units are thereby sequestrated and destroyed, either by direct atrophy and fatty degeneration or by being engulfed and disintegrated in the cystic fluid that is subsequently formed about them. Early treatment is advisable. Minor surgical procedures, such as aspiration, simple incision for drainage, and injection of sclerosing substances, are futile in view of the multilocular nature of the tumours and the great danger of secondary infection. Irradiation produces indifferent results. For very large tumours in children under six months of age, irradiation preliminary to surgical treatment is desirable. Secondary surgical excision is still necessary for cure. Radical surgical excision is the treatment of choice. In the author's series of twelve cases there was but one fatality. In one case there was recurrence five months after the operation.

Myoma of the Stomach.

C. G. Toland (*The Western Journal of Surgery, Obstetrics and Gynecology*, May, 1938) describes the finding of a pedunculated leiomyoma weighing 0·7 kilogram, which was situated on the posterior wall of the stomach and was developing extragastrically. The situation of the tumour was disclosed before operation by peritoneoscopy, which was performed in the following way. A mid-line incision, 0·6 centimetre in length, was made 2·5 centimetres below the umbilicus and air was introduced into the peritoneal cavity. The peritoneoscope was inserted and the contents of the abdominal cavity were visualized. The liver could be inspected, and also the gall-bladder, the omentum, a few adhesions and the stomach. After withdrawal of the peritoneoscope the small superficial incision was closed by suture. The tumour was later removed and the patient made a complete recovery. The author has investigated the literature thoroughly and finds reports of about one hundred cases of myoma of the stomach.

The Surgical Treatment of Intractable Chronic Ulcerative Colitis.

Henry W. Cave (*Annals of Surgery*, May, 1938) states that intractable chronic ulcerative colitis necessitates the complete removal of the diseased bowel. In his opinion, less radical measures have proved inadequate. Medical management, which has consisted principally of rest, diets high in caloric value and vitamin content and with a low residue, irrigation, elimination of focal infections and the use of vaccines, has for the most part proved ineffectual. Apart from the acute emergencies of impending perforation or massive repeated hæmorrhage, surgical treatment should be withheld until two factors have been evaluated: the clinical response to conservative treatment, and the degree and extent of permanent damage to the colon. In the author's opinion, appendicostomy, caecostomy and colostomy are useless in these cases, and their employment is based on the unjustifiable assumption that medicated irrigations will eliminate infection and therefore accomplish cure. Not only are these procedures neither curative nor even palliative, but they complicate subsequent radical surgery, if this becomes necessary. Partial colectomy, according to the author, is justified in selected cases, in which the disease is limited to one portion of the colon. The Mikulicz type of resection is ideal and relatively safe. The author states that with adequate preoperative preparation and adherence to certain technical principles, the whole of the diseased large bowel can be removed without any great risk. He has operated on six such patients, though not in all cases has the colectomy been completed. There have been no fatalities; post-operative convalescence has been smooth and the patients have experienced an amazing gain in weight. The preoperative preparation is careful and thorough. The anæsthetics used were "Avertin" and cyclopropane. The author is, however, not averse to the use of spinal anæsthesia with "Nupercaine" (Ciba), used in a dilution of 1 in 1,500. Three separate stages, occasionally four, are usually required to perform a total colectomy. The first stage is the performance of a transverse permanent ileostomy, 15·0 centimetres from the ileo-caecal valve, through a right-sided McBurney incision. The distal end of the divided ileum is dropped back and a blood transfusion is given. Five to eight weeks later, or after an interval long enough to ensure reestablishment of water balance, gain in weight and general improvement, the patient is ready for the second operation. Through a long left paramedian incision the small segment of terminal ileum and the ascending, transverse, descending and upper sigmoid sections of the colon are removed, approximately 8·0 centimetres only of lower sigmoid colon being left above the peritoneal reflection. Another transfusion is required at this stage. The third stage is a combined abdomino-perineal resection, performed two to six months after the second stage, and followed by blood transfusion. In a particularly debilitated patient it is safer to employ four stages, the second operation being the resection of ascending and transverse colons, and the third the removal of the splenic flexture, the descending and upper sigmoid portions of the colon.

The Use of Fascia and Ribbon Catgut in the Repair of Cleft Palate and Hare-Lip.

Addison G. Brenizer (*Annals of Surgery*, May, 1938) has described shortly the Langenbeck operation and two of its modifications, those of Veau and Dorrance. He states that in spite of these very useful methods the efforts of even the most skilled surgeons have failed to produce good results in some cases of hare-lip and cleft palate. He had been in the habit of using strips of *fascia lata* and ribbon catgut as means of additional support in the more difficult cases. The objects of doing so were, first, to provide a transmitter of the tension on the stitch line to a point beyond it and to distribute this tension; secondly, to form a background or

scaffolding for the flaps and the stitch line and to hinder movement at the stitch line; and, thirdly, to create a bumper against pressure with the tongue, vomiting, coughing or sneezing. When fascial strips were used frequently they did not come away, but remained in the scar, adding to its strength. Closure of a wide cleft in the palate and in the alveolar process commenced as soon as the hare-lip was repaired, the mere closing of the lip moulding and bringing together a wide alveolar cleft. In the author's opinion, wiring, even of a double cleft, is unnecessary and in fact unwise, because the alveolar processes may approach too closely, forming a narrow maxillary arch and so producing bad occlusion. Further, wiring may produce cramming of the septum and turbinates together and so interfere with nasal function. The desired position of the premaxilla is not one far back between the two halves of the maxilla, but merely a position in contact and continuous with the alveolar arch. In the operation for hare-lip he inserts a fascial strip under the mucoperiosteum of the premaxilla and out and under the mucoperiosteum of the premaxilla and alveolar process, where it is sutured. The band is drawn tightly and attached at each alveolar process. Another strip of fascia is passed under the philtrum between the mucosa and muscularis and is stitched into the lips on both sides. This pulls the lips together and relieves the tension on the suture line. The further closure is of the usual type. In cleft palate repair the author uses a quadrangular strip and places this behind the mucoperiosteal flaps made in a Langenbeck type of operation or between the buccal and nasal mucoperiosteal flaps of the Veau operation.

A Simple Treatment for Empyema in Children.

Byrd Charles Willis (*Annals of Surgery*, May, 1938) advocates the "trocar-punch" method of draining an empyema. He reports 104 cases of empyema in children under thirteen years of age, in only 16 of which was a rib resection performed. Five patients died, a mortality rate of just under 5%. He believes that the punch operation is associated with a lower mortality rate if the patients are given adequate after-treatment for the local disorder and for the maintenance of general health. He insists that the attendants, both nurses and doctors, should be well trained in all the manœuvres necessary for the removal of fibrinous flakes through the small tubes. He admits that it is far more difficult to treat patients by this method than by placing a large tube in the chest through an opening effected by resection of a portion of a rib; but the lower mortality rate and the freedom from postural changes, unsightly scar and pus-soaked dressings should compensate both the patient and the surgeon. He uses local anæsthesia, inserts the needle into the pleural cavity, aspirates pus, disconnects the syringe and makes an incision 1·25 centimetres long through the skin and deep fascia beside the needle in the line of the intercostal space. He introduces the trocar directly into the pleural cavity, pulls out the obturator and introduces a fairly rigid special tubing, about 5·0 millimetres in gross diameter with a lumen of 3·0 millimetres. It should be twice the length of the cannula and should fit snugly, with no opening on the side, and should be introduced to a depth of 7·5 to 10·0 centimetres, so as to reach well beyond the walling-off process of the cavity. If the child is not very ill the pus is evacuated while the cannula is in position; but if there is a large accumulation the pus should be withdrawn at intervals in order that the intrathoracic tension should not be too rapidly reduced. For an air-tight dressing he uses 19·0 square centimetres of rubber tissue made from the wrist of an old glove, punches a hole in the centre and threads the rubber tissue over the tube down to the chest wall. The sides of the rubber tissue are then sealed down to the chest wall with adhesive. He uses both open and closed methods of drainage. Irrigations with Dakin's solution are employed after operation, but not until at least two days have elapsed. The tube is shortened according to the capacity of the cavity and the fluoroscopic findings. It is removed only when the cavity holds less than 2·0 cubic centimetres and when no other collections of pus can be detected by X ray examination. The cavity must be obliterated before the tube is permanently removed.

Restoration of the Blood Supply in Fractures of the Neck of the Femur.

F. H. Albee (*The Journal of the American Medical Association*, June 18, 1938) states that in three hospitals in New York the records show that union was obtained in 38% to 46% of fractures of the neck of the femur. All three hospitals reported a 20% incidence of aseptic necrosis of the femoral head in those cases resulting in union. The author is studying the relation of the blood supply of the proximal fragment to this phenomenon. The subcapital fracture of the hip presents a different problem from that of other fractures, and mere reduction and immobilization are not all that is required. The proximal fragment, being intra-articular, is cut off from all sources of blood supply distal to the joint. The role of the *ligamentum teres* in these cases as a source of blood supply thus becomes important. The author has studied the condition of the *ligamentum teres* in 413 cases of reconstruction of the hip joint for non-union, and has found that it had been torn in 411. He believes this is due to the concerted action of two groups of muscles at the time of fracture; the rotators of the hip pull medially on the trochanter, holding the fractured surfaces of the fragments together, while the more powerful thigh muscles force the distal fragment upwards, thus rotating the distal end of the capital fragment upwards and tearing the *ligamentum teres*. He believes that when non-union occurs it is due to destruction of the *ligamentum teres*. When impaction occurs the ligament is not so likely to tear, and necrosis of the head is absent. He advocates the use of a bone peg as a means of stimulating collateral circulation in fracture of the neck of the femur when aseptic necrosis is likely to occur.

The Retroperitoneal (Retrocolic) Appendix.

William B. Marbury (*Annals of Surgery*, May, 1938) reports six cases of retrocolic appendix, and offers suggestions as to their operative management. He draws a distinction between the retrocaecal position, limited by the space behind the *caput caeci*, and the retrocolic position, which extends upwards behind the ascending colon. He points out that the latter position is also almost always retroperitoneal, while the retrocaecal position is usually intraperitoneal, the appendix lying free and having a complete peritoneal investment. He reviews the literature dealing with the anatomical position of the appendix, and states that the appendix is retrocaecal in over 50% of cases, and this is the normal position; the retrocolic occurs in 7% of cases. He concludes that the McBurney incision is the best when the diagnosis is appendicitis, but it should be extended upward or downward, even at the expense of severing muscles, when necessity demands. When the appendix is retrocolic the ascending colon should be reflected medially, by incision of the outer sheaf of the mesocolon, so as to expose the appendix for its entire length. He states that there is little or no danger of post-operative hernia if the muscles cut across are carefully repaired.

Regional Ileitis Treated Conservatively.

I. Kross (*The American Journal of Digestive Diseases*, July, 1938) reports three cases of regional ileitis treated conservatively. In one the ileum was left undisturbed, in another ileostomy was performed to forestall obstruction, and in the third ileocolostomy was performed without resection. The patients were observed for five and a half, four and three-quarters, and one and a quarter years respectively, and in no case was there any recurrence or recrudescence of the disease.

Special Abstract.

FINAL REPORT OF THE COMMONWEALTH ADVISORY COUNCIL ON NUTRITION.

To discover the present state of nutrition of the Australian people, and to examine any evidence that they are undernourished or that their diet is improperly balanced, was the object of the investigation made by the Commonwealth Advisory Council on Nutrition. The data and conclusions have been made available in the council's final report (August, 1938). This is the largest single statistical and medico-social study ever undertaken in the Commonwealth of Australia.

The council was appointed by the Commonwealth Government in 1936, after decisions made by the League of Nations and the International Labour Conference regarding an inquiry into world-wide problems of nutrition. The personnel of the council was as follows: J. H. L. Cumpston, C.M.G., M.D., D.P.H., Director-General of Health, Commonwealth Department of Health (Chairman); Sir David Rivett, M.A., D.Sc., Chief Executive Officer, Commonwealth Council for Scientific and Industrial Research; S. M. Wadham, M.A., Professor of Agriculture, University of Melbourne; Harvey Sutton, O.B.E., M.D., B.Sc., D.P.H., Director, Sydney School of Public Health and Tropical Medicine, and Professor of Preventive Medicine, University of Sydney, representing health and agricultural interests; C. G. Lambie, M.C., M.D., F.R.C.P. (Edinburgh), F.R.S.E., Professor of Medicine, University of Sydney; W. A. Osborne, M.B., D.Sc., F.A.C.S., Professor of Physiology, University of Melbourne; Sir C. Stanton Hicks, M.D., Ch.B., Ph.D., M.Sc., F.I.C., F.C.S., Professor of Human Physiology and Pharmacology, University of Adelaide; Sir Raphael Cilento, M.D., D.T.M. and H., Director-General of Health and Medical Services for Queensland; D. H. K. Lee, M.Sc., M.B., B.S., D.T.M., Professor of Physiology, University of Queensland, representing the university medical schools; Henry Priestley, M.D., Ch.M., B.Sc., Professor of Biochemistry, University of Sydney, representing the Federal Council of the British Medical Association; Sir Harry Moxham, D.D.S., President, Australian Dental Association, representing the Australian Dental Association; and F. L. McDougall, C.M.G., Economic Adviser, Office of the High Commissioner for Australia in the United Kingdom, Australia House, London, corresponding member.

The results obtained are neither conclusive nor dramatic. They are, however, suggestive. The council's inquiry has provided widespread evidence of mild ill health produced by malnutrition, and has shown that there exists in the community much ignorance as to the proper balance of food items. A considerable mass of minor departures from health exists amongst young children in both town and country, and of the groups studied as many as 33% were found to be in an unsatisfactory nutritional state.

Housewives' Records.

The collection of raw data presented several problems. Inquiries proceeded along two main lines of research: a survey of household dietaries in Sydney, Melbourne, Brisbane, Adelaide and Perth, and a survey of the nutritional state of the children living in inland and city areas. For the former purpose an appeal was first made to the public through the medium of the daily Press, to keep records of the amount of food purchased in each household every day for a week; but this request met with a very poor response and it became necessary for trained workers to conduct a house-to-house canvass and to ask housewives to keep records (in a special book provided) over a period of at least one month. For various reasons a large number of housewives refused to cooperate, and here a serious difficulty arose. In spite of strenuous efforts made to ensure, as far as possible, that the booklets ultimately received from 1,789 families represented information from a reasonably true cross-section of the Australian population, the very cooperation of housewives presupposed a certain degree of interest in and a knowledge of the modern viewpoint on adequate nutrition of their families. For this reason the ultimate picture of the nutritional state of the community, as presented in the report, must inevitably be somewhat more favourable than the actual facts. Moreover, cooperation was obtained in a large number of cases by means of the introduction provided at kindergartens and baby health centres. The report states that evidence is available that kindergartens have a striking influence on the state of nutrition of the children attending, partly through a system of milk distribution, and partly through the better knowledge of nutritional requirements possessed by the mothers. This fact must have contributed further to the unbalanced nature of the returns. Again, only housewives living in the capital cities were consulted. In the cities (which accommodate 47% of the total population) there is available a much wider range of foodstuffs, including those perishable foods which are the most valuable from the nutritional point of view.

Results of Chemical Analysis.

Chemical analyses for carbohydrate, fat, protein, ash, water and fibre contents were carried out upon each of the 1,172 items of foodstuffs listed in the booklets. The results showed no great difference in Calories between Australian foods and those overseas which were comparable. Cereals and meat in Australia both tended to be lower in protein than corresponding substances overseas. The protein of our fruits and vegetables, on the other hand, was rather high in comparison.

On the basis of these estimations of caloric value an "economic index" was drawn up, designed to function in times of national emergency; it shows the number of Calories of some 214 foodstuffs which are available for one penny. Supplementary to this index is a list of foods, giving the amount in grammes of protein, carbohydrate and fat which is available for one penny.

An investigation of the mineral content of some Queensland foods, undertaken because there was considerable evidence of mineral imbalance in inhabitants of that State, revealed no serious deficiencies.

Food Expenditure.

Weekly expenditure on food per "adult male" in Sydney, Brisbane and Melbourne, varied between 11s. and 13s. In Adelaide it averaged 10s. 2d. The smaller figure for Adelaide is considered to be due partly to the low utilization of milk and butter in that city, and to the home growing of fruit.

Approximately thirty-four pounds of food were purchased on the average by each "adult male" per week, of which the wastage was estimated at between 5% and 10%. The fuel value of this average amount is more than sufficient to supply crude caloric requirements. Even on a caloric basis, however, 6% of the diets examined were inadequate.

Shortage of Protective Foods.

In at least 25% of the dietaries studied, the quantity of milk consumed was definitely below the minimum amount necessary for adequate nutrition. Twenty-five *per centum* also failed to contain the number of eggs recommended for consumption. The amount of potatoes in practically the whole range of diets is definitely below what is considered desirable. As regards fresh fruit, 6% of the families consumed half a pound or less per week per unit "adult male", and 12% only one pound per week per unit. There was no evidence of an inadequate consumption of butter.

Discussing the value of these foods, the council states that there is room for more efficient education of the people in the relative value of the different classes of foodstuffs.

Influence of Large Families.

As families become larger, consumption of meat and fish gives way to consumption of the less nutritionally valuable bread, cereals and sugar, and the utilization of "protective" foods decreases. In families of six children the consumption of fruit and vegetables is 38% below the

accepted standard. The consumption of milk becomes increasingly inadequate as the number of children in the family increases; it amounted to less than 50% of the approved requirement in families of six children.

Mineral Salts.

The Commonwealth Advisory Council has reduced the standard of sufficiency of mineral salts laid down by Steibeling and Ward to two-thirds of the figure for calcium, while retaining their figures for phosphorus and iron. A study of the mineral content of the diets submitted showed that 29% were deficient in calcium, 36% were deficient in phosphorus, and 68% were lacking in iron. These deficiencies also point to the need for a higher consumption of the "protective" foods.

Broad deductions, therefore, from this portion of the report are that, although evidence of a gross shortage was found in only 6% of the diets studied, there is much faulty selection of food, and that there is need particularly for an increase in the consumption of milk, cheese, potatoes, fresh fruit, fresh vegetables and eggs.

No attempt was made to survey the vitamin content of the foods used by the group selected for study by means of the booklet method. While this is certainly a serious omission, the task was quite beyond the capacity of the personnel, with the limitations on their equipment and on their available time.

Inland Survey.

The second section of the report deals with the mobile survey of the more remote interior districts of the eastern portion of Australia, conducted by Dr. F. W. Clements, of the Commonwealth Department of Health. His equipment consisted of an automobile unit comprising a motor caravan with sleeping quarters, a small laboratory and a portable X ray unit.

In the north-eastern portion of South Australia 14·0% of 925 children showed unsatisfactory nutrition. Undernourishment was usually associated with an excessive consumption of sweet foods. In Victoria 13·3% of 1,249 children who were examined showed evidence of malnutrition, and in north-western New South Wales 23·7%. Outstanding in a rough survey of the dietaries of these children was the deficiency of milk, which is frequently difficult to obtain in these areas. In western Queensland serious defects were noted in the content of mineral salts in the foods consumed. In the larger railway towns of western Queensland the unsatisfactory nature of the diet was invariably due to the excessive proportion of carbohydrate. In one family the food consisted entirely of fried bread for three meals. Many meals consisted solely of either bread and butter or bread and syrup. Of 1,399 children, 18·8% were considered to be suffering from unsatisfactory nutrition.

The mining town of Mt. Isa presented an interesting field of study, being, as it is, two towns in one, with very different social conditions obtaining in each. It was revealed that the percentage of inadequate diets was three times as great amongst the children attending the town school as amongst those attending the mines school. These statistics are a tribute to the improvement in social conditions brought about by the activities of the Mt. Isa Mines Company.

Dr. Clements conducted a further survey of Sydney children, so that he might obtain figures comparable with those for the inland. Of 751 children examined, 19·3% were recorded as malnourished.

Investigation showed that attendance of children at kindergartens favourably influenced the nutrition of all age groups. Two groups of children were examined, and the improved nutrition of those attending kindergartens is all the more striking in view of the fact that kindergarten children come from badly congested industrial suburbs, while the others are drawn both from industrial suburbs and the better class residential areas. These observations emphasize the importance of the consumption of milk as a determining factor of the state of nutrition. In kindergartens, where milk is consumed under supervision, an ideal environment is provided for the consumption by each child of at least one pint a day.

Finally, and this was the most arresting figure obtained, a further group of children between six and twelve years of age was studied in Sydney; of these, 33% were found to be in an unsatisfactory nutritional condition. An important factor in this alarmingly high percentage was the eating of frequent small "snacks" between regular meals. These small meals consisted almost solely of carbohydrate-rich foods. Education is badly needed to correct this type of malnutrition.

Economic Considerations.

In the third section of the report consideration is given to economic and other factors involved in the consumption of various valuable foods.

There is no insufficiency of milk in Australia, as export of milk and milk products takes place throughout the whole or the greater part of the year. Moreover, it is economically preferable for dairy farmers to sell their milk as whole milk rather than as cream for butter manufacture. The council draws attention to the lack of appreciation of the nutritive value of fresh skim milk.

Attention is also drawn to the possible significance of the home consumption price mechanism, by means of which butter is marketed, and its effect in restricting the purchasing ability of lower income groups.

Many observers have commented upon the low consumption of cheese in Australia. This may be due to several reasons. First, cheese is in some respects an alternative to meat, which is cheaper in Australia than in many other countries. Secondly, the variability in quality of non-processed Australian cheese does not encourage consumption; and thirdly, there is the difficulty of storing cheese under tropical conditions. It is recommended that the dairying industry consider the expansion of the consumption of cheese.

Concerning fresh vegetables and fruit, the council urges an investigation of the possibility of improving the economics of distribution. It is suggested that the price is frequently maintained at a higher figure than is justifiable, and fruit-marketing organizations are urged to recognize more fully the nutritional needs of the community when they are developing and operating the system of control.

The need for the efficient distribution in country districts of perishable foods, under conditions of refrigeration during both transport and storage, is particularly emphasized.

Recommendations for Future Action.

As a guide for future action, the council recommends that the whole system of health supervision of children be immediately reviewed, with the object of securing regular and complete supervision of bodily health during infancy and childhood to the age of sixteen; that regular instruction be given to all children in the elementary principles of hygiene and physical culture; and that regular instruction be given to all girls in the composition and preparation of food.

The council cannot accept the present state of supervision of child health as adequate, nor indeed as being the maximum which the public will permit. It believed that a definite extension along the lines indicated will receive widespread public approval.

It is further recommended that a central coordinated committee acceptable to all States of the Commonwealth be appointed to foster (i) the general health of the rising generation, (ii) the correction of faulty dietary in a general sense by the publication of dietetic advice, and (iii) the investigation and rectification of special local defects, both physical and nutritional. In order that these recommendations may be implemented, it has been suggested that a subcommittee of the National Health and Medical Research Council be formed to continue the function of the present Advisory Council on Nutrition.

It is obvious that the present survey has not been complete in any sense of the word. The problem has been merely delineated. But sufficient evidence has been made available to indicate a state of affairs which is far from satisfactory.

Proceedings of the Royal Commission Appointed to Inquire into Matters Pertaining to National Health Insurance.

Monday, September 26, 1938.

The evidence of Dr. E. H. Friedman, of Auburn, Dr. A. C. Cahill, of Waverley, Dr. Alcorn, of Katoomba, and Dr. W. J. Binns, of Kogarah, was taken *in camera*.

Mr. Dudley Keith Otton, Secretary to the Hospitals Commission of New South Wales and Superintendent of Hospitals, was examined in open court by Mr. Dovey. Mr. Otton gave evidence describing hospital organization and administration under the Commission. He described the classification of patients into the three classes, private, intermediate and public, and the procedure followed by the hospitals to ascertain the means or lack of means of the patient. The methods by which hospitals could recover fees due to them was discussed, and then Mr. Otton gave details of the financial structure of the Hospitals Commission and its administrative policy.

Mr. Dovey: I understand your attention was directed to some observations and statements made by certain witnesses before the Commission as to the impossibility or impracticability of securing beds in the hospital for patients in urgent cases unless one happened to be an honorary medical officer of that hospital. Speaking generally, can you state what the position is?

A.: The inquiries I have made from the principal metropolitan hospitals show that not more than from 18% to 24% of their admissions come through the honoraries.

Q.: Your attention was also directed to statements which were made, that in the big metropolitan hospitals at any rate it was impossible to get urgent patients in, and that there were very long waiting lists of urgent cases. Have you taken out any figures in respect of the big hospitals in Sydney?

A.: Yes, I made an analysis of all the waiting lists at all the larger hospitals.

Q.: From reports made by hospitals?

A.: I wrote to each hospital and asked for the specific information.

Q.: I think the information you obtained was as to the position in May, 1937?

A.: Yes. That was when there appeared in the metropolitan Press a lot of sensational headlines in regard to the matter.

Q.: I suppose the position in 1938 is the same as it was in 1937?

A.: We think the same position would obtain today.

Q.: Take the Royal Prince Alfred Hospital, which is one of the largest?

A.: It is our largest.

Q.: How many beds are there?

A.: Eight hundred at present.

Q.: Does that include Gloucester House?

A.: Yes.

Q.: What was the position there?

A.: There was a waiting list of 1,379 patients, of which 82 were medical, about 70% requiring treatment within three weeks; the balance were not urgent; they could afford to wait longer. There were 448 surgical cases, and about 30% of those required treatment within three weeks; there were 27 who wanted minor operations, not regarded as urgent. There were 241 gynæcological, of whom 45% required treatment within four weeks. There were 581 ear, nose and throat cases, about 30% of which required treatment within four weeks, including those which could be said to be in hand. The admission rate at the hospital was 27 per day. The waiting list was 802 twelve months ago, and it steadily increased to a peak of 1,136 in June and July last, since when it steadily decreased to 960 in November and remained about that figure, when it began to increase again till it reached the peak figure today of 1,379.

Mr. Gain: There was a 50% increase over a period of twelve months?

A.: Yes. The 1,379 was the peak in May.

Mr. Dovey: You say that of all those on the waiting list there were none that required immediate attention?

A.: Yes.

Mr. Otton then gave figures concerning other metropolitan hospitals and was then cross-examined by Mr. Gain.

Mr. Gain: There is something in these figures I cannot quite follow. Taking the Sydney Hospital, I think you told me there were 425 patients?

A.: Yes.

Q.: And the daily average is 354?

A.: Yes.

Q.: When you took the figures out in May, you had a waiting list of how many?

A.: Six hundred and forty-five.

Q.: At that time, I take it, 425 beds would be occupied?

A.: Well, there is a margin kept in reserve for urgent casualties. Every hospital is required to have a margin for casualties.

Q.: What would that margin be in a total of 425 beds?

A.: I should think about 10.

Q.: Although the daily average was only 354 at the time when these figures were taken out, you would have 415 beds occupied?

A.: Yes, that is possible.

Q.: When you gave your early figures, you showed that the total hospital accommodation in New South Wales was 12,223 beds at June 30, 1936, and the daily average occupied was only 8,621, approximately 75%. That does not paint a complete picture of the hospital position in New South Wales?

A.: It does not, because beds are classified as male, female, isolation and children.

Q.: The suggestion to be drawn from your evidence is that there is ample hospital accommodation in New South Wales, because approximately only 75% of the accommodation was available, but that would be incorrect?

A.: It would be incorrect.

The Chairman: In what respect would it be incorrect?

A.: It would be incorrect inasmuch as all the beds are not available for any patient, because they are divided into male, female, isolation, children's and maternity.

Q.: There are some special reserves?

A.: Yes, and they would not be interchangeable.

Mr. Gain: As a matter of fact, in the metropolitan hospitals it is the normal thing to have a waiting list?

A.: It is normal to have a waiting list.

Q.: Could you give me any idea of the normal waiting time for a patient of the metropolitan hospital?

A.: No.

Q.: It would be something in the nature of three or four weeks?

A.: On those figures I took out there are plenty of patients who could afford to wait three or four weeks.

Q.: Irrespective of how long they could afford to wait, what is the normal waiting time?

A.: I have never taken out any figures on that. I might be allowed to qualify it by saying that there is no waiting time so far as urgent cases are concerned.

Q.: What do you mean in this classification by "moderately urgent"?

A.: That is the classification of the medical superintendents of those institutions.

Q.: "Moderately urgent" means a case requiring some attention?

A.: I take that to mean that it does not follow that the patient has to wait that time; but if he had to wait that time, his condition would not be prejudiced.

Q.: To wait what time?

A.: Four weeks or three weeks.

Q.: In a case classified as moderately urgent, it would not hurt to wait for three or four weeks?

A.: They give the time.

Q.: Is that your interpretation?

A.: Where they are moderately urgent they are not prejudiced by having to wait for a bed up to the time specified by the medical superintendent.

Q.: I do not suppose you could give me the total number of services rendered by honorary medical officers in the public hospitals?

A.: No.

Q.: Nor have you made any estimate of the value of those services, on a service or other basis?

A.: No, I have not.

Q.: Have you worked out any figures to show the average cost per service to your patients in the hospital?

A.: We have done it for our out-patient services.

Q.: I have your annual report here; do you need that to tell me the cost per service to out-patients?

A.: It has been estimated that 700 out-patients are the equivalent of one in-patient per year. In other words, we allow hospitals to increase their daily average of occupied beds by one for every 700 out-patients.

Q.: You mean you take it that two out-patients would be the equivalent of one in-patient?

A.: No, 700 individual out-patients treated in the year.

Q.: Taking each visit as one treatment?

A.: No. That is not attendance, that is just the individual members. Each of those out-patients averages three visits.

Q.: That is, 2,100 visits for out-patients is the equivalent to 365 beds, or about one to six?

A.: Yes.

Q.: Have you any figures showing the cost to the hospital of an out-patient?

A.: No, not for the out-patients. They have been adjusted on the basis I have referred to and brought into cost as in-patients.

Q.: You told me you had no record of the medical or surgical services rendered by honoraries. Could you give me any idea what proportion they would be of the total services?

A.: No, it would be very difficult to express any opinion about that.

Further cross-examination by Mr. Gain followed, as to the number of indigent in-patients and as to the length of time which an out-patient might have to wait for attention, and the waiting time in moderately urgent cases and in normal cases for admission.

Dr. Mulvey: In the event of a case needing urgent admission, what would you recommend as the most expeditious way of getting such admission to a suitable hospital?

A.: Any medical officer, ambulance officer or policeman has only to notify the hospital that they have an urgent case and the hospital takes steps to make a bed available; otherwise we would want to know why.

Q.: Suppose there were no hospital bed?

A.: They would have to improvise one. In the case of large hospitals with patients due to go out tomorrow, it would not prejudice them to go out today, to make available a bed. Still, they have to be vacated without detriment. It may mean getting stretchers and putting them in a spare place. There is no excuse for not admitting an urgent case. For instance, in no circumstances, we say, would a casualty or an urgent abdominal case be refused.

Q.: There is a health department that keeps a record of the number of beds each day?

A.: Yes, the Hospitals Admissions Depot.

Q.: Would admission be arranged more expeditiously through that depot?

A.: If a medical man finds he has difficulty in securing an available bed for an urgent case, he communicates with that depot, which is open day and night.

Q.: That is the crux of the matter?

A.: Yes; and if the Hospitals Admissions Depot has difficulty, they communicate with the Hospitals Commission and we will take it up.

After questioning as to a particular case, in which it was alleged that considerable trouble had been experienced in getting a bed, Mr. Otton withdrew.

The Commission adjourned until Tuesday, September 27, 1938.

Tuesday, September 27, 1938.

When proceedings commenced, Mr. Williams, who is appearing for the Friendly Societies' Association of New South Wales, indicated the nature of the evidence that he intended to call.

Mr. Williams: The evidence I propose to call will not be of any great length. The Friendly Societies' Association of New South Wales has an adult membership of approximately 200,000, and the President of that association, Mr. Newton, and the Vice-President, Mr. Springall, will be called to speak for it. As the family unit has taken some time of the Commission, I think it necessary that some evidence should be tendered on this matter. It is recognized that the unit which is significant under the sixth term of reference is that applicable to a married person. The dependent service there anticipated is for wives and children of insured persons. Mr. Newton will summarize the contract which is operative in New South Wales and offer some suggestion as to the scope of medical service which may be accepted as a basis for a finding under the sixth term of reference. He will offer an explanation of the history of the contract fee payable by the friendly societies of New South Wales. Some evidence will be given as to the number of friendly society members and dependants now contracting for a medical service in New South Wales, and the extent to which the introduction of national health insurance will interfere with this state of affairs. The average age of friendly society members and the average age of entrance into the friendly society will be dealt with. In view of the fact that there has been one rate payable under friendly society contract both for single and married members, the percentage of single and married members will be indicated. Again, for the reason that the one rate has been payable by single and married members, it was thought advisable to break up the present contract fee and indicate what would have been the fee payable by married members if the fee were not weighted against the single member. Witnesses will offer their opinion of the effect the deduction of the national health contribution from wages of friendly society members will have upon their acceptance of a dependent service, and will endeavour to indicate the effect that previous alterations in the living wage have had upon friendly society membership. Friendly societies are concerned that the panel of a doctor under the *National Health Insurance Act* will not be so large as to interfere with the friendly society contract service on the dependent service under national health insurance. In England the limit is 2,500, and apparently dependent medical service is practically non-existent there. In Australia, where friendly society contract service is extensively available and where it is expected a dependent medical service will be of considerable magnitude, the friendly societies consider that the maximum of 2,000, as suggested by Mr. Brigden, is much too high. As to the detail of the evidence under those headings, I propose to leave it to the witnesses.

The first witness called by Mr. Williams was Mr. Robert Brown Stark, of Penshurst, who stated that he was employed by the New South Wales Government Railways Department as a fitter's assistant, and was the secretary of a branch of a friendly society lodge at Penshurst.

Mr. Williams: Have you discussed with your members the effect the introduction of national health insurance will have upon their contract medical service?

A.: I have, with those with whom I come in contact.

Q.: Do you come in contact with a big percentage of your members?

A.: With the majority of them.

Q.: What is their feeling towards a dependent medical service?

A.: The majority of them are of the opinion that there should be some reduction for the insured person, and that when the national health scheme comes into effect the insured person should not pay twice for the one service. At the present time we pay 9s. 3d. per quarter for the medical fee for the whole family, and they are of the opinion that since the insured person will be covered by national insurance they should get a reduction in their medical fees.

Q.: For the dependent service?

A.: Yes.

Q.: That 9s. 3d. is broken up in this way: 6s. 6d. per quarter for the doctor and, in your case, 2s. 9d. for the chemist or dispenser?

A.: That is correct.

Q.: That 6s. 6d. to the doctor represents a quarter's payment of the 26s. per year?

A.: That is it.

Q.: What you say is that, having paid into the national insurance fund a certain amount for medical services, they desire their dependent service to cost them something less than they are now paying for the full service?

A.: Yes.

Q.: At the moment they are paying approximately 9d. per week for their medical service?

A.: Yes.

Q.: Can you indicate to the Commission what you think they would be prepared to pay for the dependent medical service for their wives and children alone?

A.: I should think about 6d. per week.

Mr. Abrahams: Does that include doctor and chemist?

A.: Yes, the same services as they are now receiving.

Mr. Stark was cross-examined by Mr. Abrahams as to the accuracy of his estimate, and was also cross-examined by Mr. Dovey.

Mr. Dovey: I take it that in discussing these matters with your members and with your fellow workmen generally you have found a desire on their part to provide medical benefits for their wives and children?

A.: Yes.

Q.: You have not found them saying: "Well, I am insured, and the wife and children will have to go to the out-patients' department of the hospital"?

A.: No, what is most in the minds of my members . . .

Q.: And also of workmates who do not happen to be lodge members?

A.: Yes.

Q.: What is disturbing the minds of your workmates who are not members of a lodge?

A.: Just the same thing. They are anxious to know what provision can be made for some form of medical service for their wives and children.

Q.: They have not indicated that they would not be able to provide anything for their wives and children if they had to contribute to this scheme?

A.: Yes, they have.

The Chairman: You say that is the feeling amongst your workmates; they are anxious as to the medical service to be rendered their wives and children when the insurance scheme comes in?

A.: Yes.

Q.: At present, how do those who are not in lodges arrange for medical service? Do you know?

A.: I have no idea what they do.

Mr. Abrahams: Just before Your Honour spoke, my friend put a question as to whether they feared they might not be able to keep up both. The witness said that they did fear that.

Mr. Dovey: I suppose you have discussed this matter with your workmates, that after January 1, 1s. 6d. may and probably will be deducted from your wages each week for the purpose of national health insurance, providing benefits for yourself?

A.: Yes.

Q.: Have you discussed with your workmates the question of whether or not the fact that you will have 1s. 6d. per week less in wages would prevent them from giving to their wives and children the same medical service that they receive today? Do you think it would?

A.: No, I do not think so.

Mr. Abrahams: Are you a married man?

A.: Yes.

Q.: How many children have you?

A.: Three.

Q.: I suppose 1s. 6d. is a consideration to you?

A.: Yes, it is.

Q.: For financial reasons it is important to you and men in your situation that lodge fees for dependants should be kept as low as possible?

A.: Yes.

Q.: There are some men you know who have a struggle to keep up the lodge payments as it is?

A.: Yes.

Q.: If they have 1s. 6d. a week on top of that, the struggle will be greater?

A.: Yes.

Q.: There are some people who, through no fault of their own, are unfinancial in lodges?

A.: Yes.

Q.: Looking at the matter broadly, is it not likely that there will be a larger number unfinancial through no fault of their own if they have an additional burden of 1s. 6d. per week?

A.: There will be, yes.

Mr. Dovey: Do you think 1s. 6d. per week to those in employment will affect them to the extent that they will become unfinancial?

A.: They will not drop out of the lodge.

Q.: People become unfinancial in the lodge when they become unemployed?

A.: In our society there is provision made for unemployment. When a member becomes unemployed he gets a suspension of his fees, and although not entitled to sick pay while the fees are suspended, his arrears are mounting up.

Q.: Generally speaking, the cause of a man falling into arrears is unemployment?

A.: Yes.

Q.: So long as he is working he pays his dues?

A.: Yes.

Mr. William Newton was examined by Mr. Williams. He stated that he was the Grand Secretary of the Independent Order of Oddfellows and the President of the Friendly Societies' Association of New South Wales. Mr. Newton gave detailed evidence as to the medical services provided through the friendly societies, the arrangements with the medical officers, the nature of the services provided, and his knowledge and experience in these matters.

Mr. Williams: I think there is a night fee payable under the agreement?

A.: Yes. If a doctor is required to attend a member or dependant between 8 p.m. and 8 a.m. for any illness covered by the contract rate, he is entitled to a special fee of 5s. for such attendance.

Q.: What is your experience? Is that usually charged?

A.: Yes, I think it is usually charged.

Q.: Do you think the provision of such a fee acts as a deterrent to members calling doctors unnecessarily at night-time?

A.: Well, the fee is usually charged, and it is difficult to say what would happen if it were not charged. I do not think the members of friendly societies unnecessarily worry the doctor, and he would not be called at night-time unless there were need.

Q.: Whether or not there was a night fee?

A.: Yes. I should say the provision of a special night fee has a tendency to prevent unnecessary calls.

Q.: Then there is a mileage rate?

A.: Yes. The medical officer is entitled to payment by the member at the time of each visit for mileage at the following rates: Within the metropolitan area, 3s. 6d. per mile or fraction beyond two miles travelled on the outward journey only. If the visit is at night-time the rate is 5s. per mile or fraction. Outside the metropolitan area it is

5s. per mile beyond two miles on the outward journey, which rate is increased to 7s. 6d. at night-time, that is, between 8 p.m. and 8 a.m.

Mr. Newton gave evidence to compare the scope of the services provided for by contracts in the various States. A statement of the average scope of service under friendly society contracts in Australia was tendered as an exhibit.

Mr. Williams: That is what you suggest is the full scope of medical service taken from the friendly societies' agreements throughout Australia?

A.: Yes.

Q.: That does not differ materially from the New South Wales scope of service?

A.: No, it does not.

Q.: Has this contract medical service which has been rendered in New South Wales proved satisfactory?

A.: The service which has been rendered to members of friendly societies under the common form of agreement has proved most satisfactory. There is very little call from friendly societies for any widening of the scope of the medical services. And there will certainly be no call for the widening of the scope of medical services if such widening results in an increase of the fees.

Mr. Abrahams: Do you mean that the medical services provided have been satisfactory both as to scope and as to quality?

A.: Yes, most satisfactory.

Mr. Williams: Do you consider the exclusion of fractures and dislocations an important matter?

A.: No. The exclusion of the setting of fractures and dislocations from the medical service is not such, in my opinion, as vitally affects the member, having in mind that such injuries usually occur in circumstances in which they are provided for under the *Workers' Compensation Act*, or they occur in such circumstances as call for the injured person's immediate conveyance to the nearest hospital.

Q.: What do you consider should be the scope of service that should form the basis of the Commission's findings under the sixth term of reference?

A.: In my opinion the scope of service which should form the basis of the Commission's finding under the sixth term of reference should be the average scope of service provided for in the friendly societies' contracts in Australia.

Q.: Assuming a dependent service is provided for dependants of insured persons, do you think it will be availed of to any extent?

A.: Oh, yes. My experience is that it will be largely availed of by persons who come under national insurance, more particularly if the fee can be brought within their reach. The indications are that people seem to be getting insurance-minded, and people who were never concerned about friendly societies can see that national health insurance is a form of insurance that is desirable. I think there will be quite a number of people who previously had not bothered with friendly societies who will make inquiries about this.

Q.: I suppose many such people will become members of approved societies formed by the friendly societies?

A.: Yes.

Q.: And they will come in contact with the friendly societies in that way?

A.: It will be one of our functions to bring them in.

Q.: Do you think there will be many lapses from your friendly society membership as a result of the introduction of this Act?

The Chairman: That is to say, because of the fact that they will have to find 1s. 6d. a week for the insurance fund?

A.: I think there will be a number of lapses with respect to single men, but I think there will be hardly any lapses with respect to married men, provided the fee for the dependent service is within their financial accomplishment. As a matter of fact, they are inquiring about that medical fee, as to how much they will be reduced in contribution.

Mr. Williams: Is any adjustment of contributions contemplated on the part of the friendly societies?

A.: There will be an adjustment of contributions in respect of those who feel it necessary to retire from contributing in respect of the sickness benefit.

Q.: So that you will come to this position: there will be a reduction of the contributions by taking it out of the sickness contribution in some way?

A.: That is so.

Q.: And then they are concerned to pay something less for their dependent service than they are paying at the present time for the full service?

A.: Yes.

Q.: What do you think should be done in regard to the payment for services outside the terms of the contract?

A.: In my opinion a schedule of fees payable for services excluded should be set out. There should be provision in such schedule for a reasonable fee. I am sure that this would result in the members retaining the services of medical practitioners in preference to going to a public hospital.

Q.: Dr. Mulvey suggested that there was something already in existence from which one could work out such a schedule. Do you think that could be attempted?

A.: I think we would have no difficulty in compiling a schedule of fees that would be acceptable to both parties. Before this Commission finishes its sittings I might be able to suggest some type of schedule.

Mr. Newton was cross-examined by Mr. Abrahams. He stated that he estimated on a basis of 20,000 members a gross increase of 2·5% in membership within six months.

Mr. Abrahams: That is from people who never in their life have bothered to insure their dependants or themselves, although friendly societies have been established in this country for a great many years?

A.: That is so.

Q.: Those are people who fear that they will not be able to do what they have done in the past, namely, keep up a private payment to practitioners, but will want a contract payment to practitioners?

A.: I would not like to answer that.

Mr. Newton stated that great efforts were being made to retain members and to get new members.

Mr. Abrahams: I suppose efforts you are making to retain membership are costing you some money?

A.: Yes.

Q.: Whatever the reason, you fear that if you do not take these steps you will lose membership?

A.: That is so.

Q.: You have a real fear that something may happen to prevent their retaining their membership, because it may be that it is not within their financial attainments?

A.: Yes.

Mr. Newton was further questioned concerning certain aspects of lodge practice and then as to the scope of service.

Mr. Roy Rounse Springall was examined by Mr. Williams. He stated that he was the Grand Secretary of the Protestant Alliance Friendly Society of Australasia and Senior Vice-President of the Friendly Societies' Association of New South Wales. He gave evidence concerning the number of members of friendly societies in New South Wales and the number who had allowed their subscriptions to lapse. Discussion ensued as to the average ages of friendly society members and the amount of the friendly society fee referable to services for the member himself.

The Chairman: The point is this: can we in any way at all arrive at the amount which in lodge practice has been paid for treatment of the lodge member? Never mind about dependants. If we could get that figure, we could make a neat comparison with the amount which it is suggested should be paid as the capitation fee for the insured employee.

Mr. Wilson: Of course, that again has to be loaded. You cannot take it promiscuously and divide it by 2·5, because nearly every witness has admitted that it is the wives and children who have more attention than the members themselves.

The Chairman: It may be that after arriving at the proper amount paid in contract practice in the past, say the nice round sum of 30s, we will have to ask how much of that is to be regarded as paid for medical attention to the lodge member as distinct from his dependants.

Mr. Abrahams: While we are weighting it on the one side perhaps counsel for the Crown will weight it on the other side, having regard to absence of medical attention and a few other factors.

Mr. Wilson: I doubt whether we will ever get sufficient figures on which to base a proper mathematical calculation.

Further evidence was given as to ages and family units of friendly society members. *Questionnaires* had been sent out, Mr. Springall stated, but the replies had not yet been completely tabulated.

At 4.35 p.m. the Commission adjourned until 10.30 a.m. on Wednesday, September 28, 1938.

Wednesday, September 28, 1938.

The examination of Mr. R. R. Springall was continued. He gave a great deal of statistical information concerning friendly society membership, stating among other things that 1932 figures for the Manchester Unity Independent Order of Oddfellows showed that 72% of the male members were married. He later stated that a more recent and, he thought, more accurate calculation gave the figure at the present time of 65%. He said that it was clear that there was some weighting against the single male in that the fees of the single member had been loaded to enable a reduction to be made for the married member, and that it was quite evident that the married member, having more liability, was in a less favourable position to pay an increased rate. After the national health insurance scheme had come into force, single members, he said, would almost certainly take their medical benefits under that scheme, with the result that the ratio of married members to single members would be higher than it was before. The nature and cost of the dependent service under the Act were then discussed, and a large quantity of statistical evidence was produced.

Mr. Williams: Have you anything further to say on that?

A.: Assuming that a fee approximating that now paid by the married members of friendly societies can be arranged for medical service to themselves and their dependants, there can be little doubt that all the members of the friendly societies who will not come under the provisions of the *National Health Insurance Act* will continue to avail themselves of the contract service.

Q.: That is, if it continues to approximate what it is at the present time you have no doubt they will want to avail themselves of the contract service?

A.: That is so.

Q.: What of the others?

A.: It is also my opinion that many insured men who have not been members of lodges and who will now come under the *National Health and Pensions Insurance Act* will seek some means of providing a medical service under a contract system for their dependants.

Q.: On what do you base that opinion?

A.: On two considerations. Firstly, that the man himself who has been brought into contact with a contract type of service will become conscious of its advantages.

The next matter discussed was the movements in the membership figures of the friendly societies in the past and the causes of such movements.

The question of the right of a medical officer administering the dependent medical service to refuse to accept certain patients on his panel was discussed.

The Chairman: As I see it, in the case of the insuree, the Insurance Commission will have the right to allot an insuree to some panel practitioner, who will not be entitled to refuse. Although a panel practitioner has a right in the first instance to say, "I will not accept so-and-so as one of my panel patients", the Insurance Commission will have an overriding right to say, "We must find a doctor for him somewhere and we select so-and-so for him?

A.: It may operate with dependent medical service also.

The Chairman: Then they would have that power in the case of the insuree; but they would not be running this dependent medical service. It is something outside their function, and there will be nobody, apparently, who would be able to exercise that overriding power, who could say "This dependant must be treated by you, Dr. So-and-So".

Mr. Dovey: I suppose they will do what they do at present, as Dr. Mulvey reminded us about yesterday.

The Chairman: The doctors will reclaim their freedom, certainly. So it means that a certain percentage of bad health cases of dependants will not get medical treatment under this dependent medical service system, but will be left as at present.

Mr. Williams: I think that follows from the fact that it is entirely voluntary, even in the terms of reference. I personally anticipate it would be on the lines of the present friendly society arrangement?

A.: It would be entirely a matter between the friendly societies and the medical practitioners.

After some further questioning Mr. Springall withdrew.

Dr. Arthur Thomas Rowlandson Robinson, of Lakemba, was called as a witness by Mr. Dovey and was examined by him. He gave evidence as to the number of attendances at the out-patients' department at Sydney Hospital while he was an honorary clinical assistant there from 1924 until two or three years ago.

Mr. Dovey: Taking the good with the bad, new patients with old, on an average how many would go through your hands in an hour?

A.: There were three of us working, and we would handle some hundreds between two and eight o'clock at night, sometimes till nine; some two or three hundred.

Q.: Would there be three of you doing the job?

A.: As a rule.

Q.: That would be 200 or 300 in 15 working hours?

A.: Yes, that would be one afternoon.

The Chairman: With no meal break?

A.: We did not always go till nine o'clock; sometimes we got away at seven.

Q.: Did you work through continuously?

A.: Stopping only for afternoon tea.

Q.: How long did that take?

A.: A quarter of an hour.

Mr. Dovey: You did not have dinner until you had finished?

A.: That is so.

Q.: Where were you practising at that time?

A.: At Lakemba.

Q.: I understand that you have formed an opinion upon the national insurance scheme and the proposed rate of remuneration to doctors?

A.: No, I have not formed any definite opinion as yet.

Q.: You did form one some time ago, did you not?

A.: It is a thing on which we really cannot form an opinion.

Q.: Do you remember at the end of May of this year you expressed your opinion and your view upon the scheme from the general practitioner's point of view?

A.: Yes, I may have expressed my opinion.

Q.: Oh, come; you may have; don't you remember that you did? Let me see if I can refresh your recollection. In the first place, did you not say that the scheme was twenty years overdue?

A.: Certainly. Don't you think so?

Q.: Don't you trouble about what I think. In your view the scheme should have been welcomed by the profession with as much joy as it was welcomed on its introduction in England?

A.: It should be welcomed.

Mr. Abrahams: Do we know how much joy that was?

Mr. Dovey (to witness): In your view it was welcomed with joy by the general practitioners there?

A.: I understand it was.

Q.: Your understanding was that owing to the unwieldy state of the old lodge system it was a constant source of

irritation between the doctors and lodge secretaries, and the secretaries exercising tyranny over the doctors in many cases?

A.: That is perfectly true.

Q.: So that patients found themselves on whatever doctor's list the secretary desired?

A.: Very often.

Q.: Now that I have refreshed your recollection, do you remember expressing that opinion?

A.: That is perfectly true.

Q.: Do you remember expressing the view that the new rates of pay offered to doctors under this new scheme of national health were ample?

A.: Eleven shillings *per capita per annum*? It would be for some people; others possibly would require more.

Q.: What is your opinion?

A.: It is ample for me.

Q.: And you arrived at that conclusion for the following reason, did you not: that actually in practice it works out that for each lodge patient the general practitioner received more money than if each patient were treated at the rate of 10s. 6d. per visit, that is, taking everything into consideration—bad debts, whether he would come to see you at all if he were a private patient, and so on—is that your considered opinion?

A.: That is generally believed so.

Q.: At any rate, that is your opinion?

A.: It is generally believed so.

Mr. Abrahams: What is generally believed so?

A.: That is with the proviso that the 11s. *per capita* works out at the same rate as the present lodge system does.

Mr. Dovey: So far as you as a general practitioner are concerned, you have definitely established to your satisfaction that for the class of man who comes to you as a lodge patient you are better off receiving the *per capita* payment from quarter to quarter than you would be if he came to you as a private patient?

A.: But only from a monetary point of view.

Q.: I think you have told us that you had experience as a *locum* in Mackay?

A.: I think the rates were higher up there, though I am not sure of that.

Q.: I think they were perhaps a little higher. At any rate, your experience in Mackay was this: there were three doctors . . . ?

A.: About four, I think.

Q.: Three of you between you had some thousands of lodge patients?

A.: Yes.

Q.: After some discussion those doctors decided to turn the lodge practice down?

A.: That is a fact.

Q.: And refused to treat them as lodge patients?

A.: Yes.

Q.: After some little while they were very glad to take them back?

A.: They were.

Q.: Because their revenue had fallen off considerably, as these people did not come back as private patients?

A.: Yes.

Q.: I think it is your opinion that some provision should be made by way of a deterrent in respect of unnecessary night calls?

A.: I do, definitely.

Further evidence of Dr. Robinson was taken *in camera*.

Dr. Theodore William Van Epen, of Bankstown, was called as a witness by Mr. Dovey and examined by him. He gave details of his contract practice, government social service practice and private practice, and the comparative rates he received for attendances in these types of practices.

Mr. Wilson: How do you find your lodge patients treat you?

A.: On the whole very well.

Q.: You are not called out unnecessarily?

A.: Very seldom.

Q.: You live in a closely settled area and have practically no travelling beyond the three-mile radius?

A.: We have about a five-mile radius there.

Q.: In the six years you have lived there have you found a tendency on the part of your lodge patients to go to the hospital for the extra treatment?

A.: Yes, a big tendency that way.

Q.: So that you are not getting very much of that extra work from your lodge patients?

A.: Very little indeed.

Q.: Do you think there is a tendency for people in industrial areas on low incomes to use the public hospitals more than they used to?

A.: Yes.

Q.: And that has grown during the six years you have been there?

A.: It was not very noticeable in the first two years, because at that time the practice was very small; but when the practice grew I noticed a tendency for the patients to go to the hospital, especially since this hospital contribution scheme came into existence. They think if they pay into a hospital fund they should get hospital treatment.

After cross-examination by Mr. Abrahams as to fees and attendances, Dr. Van Epen was asked by the Chairman: Suppose you had a schedule of charges for outside operations as covered by the contract, and suppose those charges were concession charges, below the charges you would make to an ordinary private patient; would that induce your lodge members to come to you for treatment for those outside matters?

A.: I definitely think it would.

Dr. Malcolm Charles McKinnon, of Dapto and Albion Park, near Wollongong, was called as a witness by Mr. Dovey and was examined by him. He described his practice as one half industrial and mining and the other half farming. He said that he had three kinds of contract patients, friendly society members, employees at the mines and steel works, and relief workers. He gave details as to the returns from these patients and from his private patients. He stated that his experience was that the lodge patient came to him very much more frequently than the private patient.

Dr. McKinnon was cross-examined at some length by Mr. Abrahams concerning the figures he gave as to his practice.

Mr. Abrahams: You do not want mileage for the money it brings you?

A.: No.

Q.: You want mileage for the chance it gives you to get on with your work?

A.: Yes.

Q.: And to get your sleep?

A.: Yes.

Q.: You do not care what the amount is, as long as it deters the patient from calling you out?

A.: I do not care to whom it is paid, so long as it is paid by the patient.

Dr. Robert Alexander Scott-Orr, of Fivedock, was called as a witness by Mr. Bowie Wilson and was examined by him. He gave details of his lodge practice, attendances, fees and expenses.

Mr. Bowie Wilson: Do you find any difficulty in getting patients, when necessary, into hospital?

A.: Yes, I find difficulty in getting urgent cases in, and often have to ring up all the hospitals in Sydney before succeeding; and it is not always easy to get them into the Western Suburbs Hospital because they have not the beds. But I am able to get all my cases into hospitals comfortably enough if I can wait for a month or so. In the case of those that are not urgent I have commonly to wait for a month or six weeks, but wherever possible they take an urgent case at the Western Suburbs Hospital.

Q.: How many years have you been at Fivedock altogether?

A.: Eleven years.

Q.: During those eleven years have you noticed the tendency for your lodge patients' dependants to go to hospital for extra treatment?

A.: Yes, there is definitely a trend in that direction.

Q.: Is it becoming more marked each year?

A.: Yes.

The Chairman: Do you think that is on account of this hospital contribution scheme? Has it accelerated the tendency?

A.: Yes. I think it has accelerated it.

Mr. Bowie Wilson: Or is it because the people are beginning to get to know the advantages of treatment at the public hospital?

A.: Yes, I think it is partly due to that.

Q.: There is an advantage in treatment at the public hospital, which gives very good treatment and attention?

A.: Yes. It is easier to arrange for a patient to have pathological examination and to be X rayed and so forth in a public hospital than in a private, as there are more facilities available. The plant is better.

Q.: Amongst your class of patients, if there is any heavy nursing to be done, I suppose it is pretty difficult to get that in a private home?

A.: They cannot afford the fees at their homes.

Q.: That drives them to the hospital in the case of any serious illness?

A.: Yes.

Q.: Then it is either to the public hospitals they go, if they cannot afford it at home, or to some of the intermediate wards or private wards?

A.: Yes.

Q.: How are you treated by your lodge patients as regards your being called out unnecessarily?

A.: I am treated quite reasonably well, I consider.

Q.: Mileage in your class of practice does not affect you at all?

A.: No.

After cross-examination by Mr. Abrahams the witness withdrew.

The Commission adjourned until Thursday, September 29, 1938, at 10.30 a.m.

Thursday, September 29, 1938.

Mr. Thomas Lindsay, who had given evidence on August 10, was recalled. He gave details as to remuneration in various districts in England, and following that Mr. Abrahams raised the question of the right of patients to select their panel medical officer.

Mr. Abrahams: . . . What I am troubled about is this: in England there seems to be a regulation providing that if a man after due notice fails to allocate himself to a particular doctor he will be allocated by the authorities after due notice?

A.: Yes.

Q.: In practice, unless there is some public health reason for it, the section is not availed of by giving him the notice?

A.: In practice it is very seldom used, if at all.

Q.: The result being that there are more insured persons than there are panel patients?

A.: Yes.

Q.: The further result being that you get a sum of over 9s. on this list you have just supplied?

A.: Yes.

Q.: In our Act there is no provision about notice. As I read it, there is no discretion vested in anybody to call on the man, and failing to call to put him on the list. As far as I understand it, and this has been my difficulty for some time, it is mandatory that medical services shall be supplied to an insured person, who has not made a selection under the last preceding sub-section, by such medical practitioner on the appropriate list as is selected by the Commission in the prescribed manner. On my interpretation of it, I fear it is mandatory on the Commission to allocate every patient to some list, in which case this money which appears to be available in England will not be available to the doctors. It is a matter of some importance, and that is why I want to point it out to the Commission. [To witness]: As a matter of practice in England, supposing Miss X., the daughter of a moderately well-to-do man, who is employed as a dentist's secretary, earning £3 a week, is on a panel which may well suit her for some purposes, for instance medicine, and she says "I am not prepared to go to my panel doctor to be treated for pneumonia, I want another doctor". What happens in England in that case?

A.: If the other doctor is not on the same list . . . .

Q.: Not in the same area?

A.: No. There is no restriction on that at all. She can go to another doctor if she likes, but it is unusual. The girl who would be likely to do that would not be likely to put her name on a panel doctor's list to begin with.

Q.: If 1s. 6d. is being deducted from her wages each week, she may say "I will get something for this, I will consult him when I have a boil or for other minor things, but when it comes to something more serious I want to pay and get other attention", or her father may want to do so, in the case I put?

A.: Yes.

Q.: What is the position in England in such a case?

A.: If the second doctor is not an insurance doctor there is no restriction on it at all. She can go there for treatment.

Q.: If he is not an insurance doctor?

A.: Yes. She wants treatment as a private patient?

Mr. Abrahams: Treatment as a private patient, and at the same time she wants the benefit of the panel for other matters.

Q.: With reference to what Dr. Mulvey put to you, this was a matter that was agitating some of the practitioners in Queensland: if a man is not a panel doctor and then is precluded—as a matter of practical politics—from attending to a patient who may require a certificate, the patient will not go to that non-panel doctor, because in the long run he may be deprived of his sick pay by so doing?

A.: No. Let me state what would happen in England as against a hypothetical case in Queensland. He may have a little difficulty in persuading his approved society to take that certificate; but it will be only a little difficulty; and in a genuine case like that, if it came up before the Ministry of Health to decide the dispute, and they were satisfied that it was a *bona fide* certificate given by a *bona fide* practitioner, they would urge them to accept it.

Q.: But there is the threatened position to the patient, that he may have trouble?

A.: He would have a little fuss. With an obstinate society it might be unpleasant, but in most cases would go through. I do not know whether I can find instructions to approved societies on this point, but I think they are to be found somewhere.

Dr. Mulvey: That agitates the minds of the practitioners, and they feel there is a compulsion on the part of them all to join the panel because of the necessity to give certificates to enable their patients to obtain sick benefit.

Mr. Lindsay produced a statement containing extracts from a discussion at the English 1937 inquiry into the capitation fee, which was read to the Commission. He was examined by Mr. Abrahams as to the nature of the evidence before the English commission.

Mr. Abrahams: The sole contest was between a set of samples selected by your department and the samples which are here criticized?

A.: Yes. May I add just one thing. Our samples were selected by our department on a basis approved by the Government Actuary.

Q.: I wanted to point out the distinction between the procedure adopted by this Commission and that commission. You say that people who had collected those samples just swore to the compilation of the figures?

A.: That is so.

Mr. Lindsay was further examined concerning complaints against and fines imposed on insurance medical officers in England.

There followed an argument concerning the fees to be charged for excluded services, also a discussion on the desirability or the necessity for the Commission's recommending the rates of fees to be charged for such excluded services.

Mr. Lindsay was then examined as to the desire of patients to have their bottle of medicine, and the attempts of the English commission to do away with this. He was questioned by Mr. Dovey concerning the evidence that he had heard given by the various witnesses who had testified to conditions in panel practices in England. Mr. Lindsay questioned the accuracy of certain of the evidence given by these witnesses and gave explanations of the conditions that they had described.

Mr. Dovey: I think you desire to call attention to some authoritative pronouncements on the system?

A.: I have already; but the one I think is most important is on page 37 of the Report of the Royal Commission in England in 1924-1926, which suggests:

> The only evidence available is that which expresses the view of those who have seen the operation of medical benefit at close quarters, and who, having seen it in bulk, are unlikely to be unduly influenced by any random diversion from the general standard, such as is apt to sway the judgment of those less intimately informed on this matter.

The next paragraph is optimistic:

> When we contrast the attitude assumed in 1912 by the medical profession and by considerable bodies of public opinion towards the medical service proposed under the Insurance Act, with the body of testimony we have now received, we can say confidently that adverse forecasts have been falsified and medical evidence has been proved in practice a successful and most valued factor in the advance in the health of the nation.

I might add that I do not include myself in those who have seen the operation of benefit at close-quarters. This is the Royal Commission speaking of the various bodies which gave evidence before it.

Q.: On page 320 Dr. Hilliard said that in his practice in England they did no surgery because they had no time?

A.: Again, that may be a little confusion of thought, because the conditions in England are different to those in Australia. The distribution of function is different. Many of the Australian doctors who have been Home have been rather shocked on finding how little surgery the general practitioner does. He does not have the same need to do it, because the system of medical service is differently organized. There is a much greater ancillary hospital organization behind him, and I think another possible way of stating what Dr. Hilliard commented on here is that because a greater proportion of surgery can be done, and is possibly better done, in the hospitals, the general practitioner has more time to give to the simpler and more purely medical services. I mention simpler and purely medical as two distinct things.

Dr. Mulvey: I think Dr. Hilliard said he had not given an anæsthetic for the whole seven years he was in panel practice in England?

A.: Is not that another symptom of the same thing, a greater division of function?

The Chairman: It might be possible in such a case as that that he would lose his proficiency in anæsthetics?

A.: Yes, that is something I wanted to point to. Two things have just occurred to me, and one follows closely on what Dr. Mulvey said. It is contained in a document which, I believe, was handed to the Commission last week.

Mr. Dovey: Only one portion of it was read?

A.: This is Sir Henry Brackenbury speaking at a conference of overseas branches and divisions of the British Medical Association in London on the question of national health insurance in the Empire. Discussing the reasons for antagonism to the introduction into the Dominions of medical benefit, the report says:

> The antagonism seems to be based mainly on an entire misconception of the scheme in Great Britain, and it was this misconception he wanted to dissipate. There was a common feeling that the effect in Great Britain had been to lower the status of practice. In at least two of the Dominions it had been said to him that the kind of practice carried on by the practitioners in those Dominions was far superior to the type carried on by general practitioners in this country. He, of course, could not be expected to admit that proposition, and he did not admit it. It was perfectly true that in large parts of the Dominions the extent of the practice of a general practitioner was wider than that of a general practitioner in a large town in Great Britain. The latter had hospitals at his doors at which special service and equipment was available, but in the Dominions, where hospitals were remote, it fell to the general practitioner to do many things which in this country were more conveniently carried out by the hospital. A good rural practice in this country, however, did not differ much in its scope from that undertaken by the practitioner in the Dominions.

Q.: You heard some doctors say, "If a patient is going to be any trouble, send him off to hospital". What do you say about that?

A.: It is quite possible that some doctors do that; but I have not sufficient first-hand experience to say whether it is general in the country. I know if that were done in London the big London hospitals would send them back. That may be done throughout the country, but I know that is the attitude in London.

Q.: The hospital would not take in a patient unless his condition was such as to warrant his admission?

A.: Of course, the doctor might get away with it. Substantially, however, the patient whom the insurance doctor should deal with himself would be sent back to him from the hospital.

Mr. Lindsay was next examined concerning the number of prescriptions per insured person and the number of services per insured person in England. He gave the figures of 4·72 and 3·76 respectively. He was then questioned as to the tendency, as shown by these figures, of patients to require medicine.

Mr. Abrahams: If patients put pressure on a doctor, which is the suggestion I gather from you, and he prescribes, would you not say there is a superficial medical practice in that case?

A.: Not necessarily. I think there might be a perfectly good diagnosis together with, I agree, a rather weak giving in to the patient. I have heard how strong that pressure can be. I have heard that from doctors; but I do not think that is inconsistent with a perfectly good diagnosis at the same time. He gives a medicine which he thinks is necessary at the time, because of the pressure put on him by the patient. I do not think it necessarily shows he has made a bad diagnosis.

Q.: Would you not agree that, quite apart from the cost of such a practice to the country, it is an extremely bad system from the point of view of the patient's health?

A.: Psychologically, yes. I should not imagine anything that would do actual harm.

Q.: If it continued to rise at the same rate as it did in 1935 and 1936 or, as it has continued to rise in the last ten years, you would just have a physic nation?

A.: I agree it is a serious problem. I do not know that it is confined to England.

Mr. Lindsay was further questioned on this point and gave 1·73 as the figure for prescriptions per insured patient in Scotland. He commented upon the great difference from the English figure of 4·72.

Mr. Abrahams then cross-examined Mr. Lindsay at length concerning the operation and efficiency of the scheme as it is worked in England, putting to him extracts from a survey of the scheme in "Political and Economic Planning" and from discussions in *The Journal of the American Medical Association* of April 23, 1938. He was then cross-examined by Mr. Williams concerning the nature and extent of the services provided by friendly societies in England and as to the extent of clerical work required to be done by panel medical officers. Finally Mr. Williams questioned Mr. Lindsay as to the relations between patients and doctors.

Mr. Williams: At the present time in New South Wales we have very amicable relations with the friendly societies, as the evidence has shown, and as the approved societies will embrace many of these friendly societies it is presumed that the same cordial relations should still exist if some control along those lines could be adopted.

The witness: Yes, certainly. The Insurance Commission has always contemplated very close cooperation with representatives of the profession before disciplinary regulations are laid down, and when the regulations are made, as far as possible they should come under the control of the profession. In the last resort, the Insurance Commission supplying the money must have some say in it, but as far as practicable the intention, I gather, is that disciplinary control should be exercised by the professional bodies.

Dr. Charles Firth Pettinger, of Wallsend, was then called as a witness by Mr. Dovey, and was examined by Mr. Bowie Wilson. He described the nature of his practice as now almost wholly confined to lodge and club members. He stated that he had 1,505 members on his list.

Mr. Wilson: Of that 1,505, what do you estimate would be the dependants per member, the average family you treat?

A.: I estimated at about two and one-third persons outside the member. Most of the people in my district marry young and mostly have large families.

Q.: You think 2·3 in addition to the member, which would make 3·3 people you would be treating for your 34s.?

A.: Exactly.

The further evidence of Dr. Pettinger was taken *in camera*.

Dr. Horace John Foley, of Glebe, was called as a witness by Mr. Dovey and was examined by him. He stated that he did not encourage lodge patients and had only a very small contract practice.

Q.: I think you have made a calculation of the number of services you rendered to private patients during the year, excluding workers' compensation cases?

A.: That is so.

Q.: Those private patients included unemployed people, pensioners, relief workers and people in distressed circumstances?

A.: That is so.

Q.: You rendered 4,200 services to your private patients during the year ended July 1, 1937?

A.: That is so.

Q.: I understand that you calculated that those services were rendered to 1,500 individual patients?

A.: That is so.

Q.: The amount of money you received for those services was £400?

A.: That is so.

Q.: Of those services I understand you to say that round about 40% were given to people from whom you do not expect to receive any payment, having regard to their circumstances?

A.: That is so.

Further evidence was taken *in camera*. The Commission adjourned until 10.30 a.m. on Friday, September 30, 1938.

British Medical Association News.

NOMINATIONS AND ELECTIONS.

The undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Channon, James Neville, M.B., B.S., 1938 (Univ. Sydney), Western Suburbs Hospital, Croydon.

Smith, Irwin Lionel, M.B., 1933 (Univ. Sydney), 8, Boronia Avenue, Croydon.

Correspondence.

NATIONAL HEALTH INSURANCE.

Sir: There is but little time left for consideration of the national health insurance scheme, and even now we are being lulled into a false sense of security by the Royal Commission, which is not even dealing with the real issues involved.

If some concerted action is to be taken it must be taken soon or it will be too late. Men's minds grow timid and fearful if the period of waiting is too drawn out. Unless something is done soon, our resistance will crumble and, once in the net, there will be no escape.

We have by this time some idea of what national health insurance will mean both to the health of the people and to those on whose shoulders the burden will rest.

Men have fought and died for less tyrannous exploitation than this Act would impose upon us, and we must be prepared to fight, and if need be, suffer privation to resist this menace, which threatens not only the economic and social welfare of our members, but those very principles in them of independence, self-reliance and self-development, upon which medicine has been founded, and on which its future development depends. Medicine has reached its present high technical and ethical standards by the untiring efforts of thousands of dauntless medical heroes, not by the efforts of pettifogging civil servants nor by government regulations. In their lust for power and domination, government will soon unconsciously destroy those precious forces of individual effort which are the life's blood of our hard-earned social democracy.

We have no need to apologize for our efforts of self-defence, and can show a record of social endeavour and service to suffering humanity not capable of being measured in a coinage of a material basis. We have no need to apologize for the fact that during the recent great depression, with no help from the powers above, medicine carried on by itself quietly and effectively; no shutters were put up, and no cry of distress went unheeded from those for whom Nature had provided no moratorium. Can the now beneficent fatherly Government show the same efficient record? They cannot. Instead, one has unhappy memories of panic and paralysis, of unemployment and near-starvation, of blighted hopes and of life's savings wiped out overnight. Let them put their own chaotic house in order before knocking down one whose foundations are at least stable and able to withstand the economic breezes which puff over those of State.

The success of medicine depends on intangible mental relationships between doctor and patient; once these are destroyed the best in medicine also will be destroyed, and national insurance will inexorably destroy this main foundation of medicine.

However well-meaning the Government may have been in introducing this measure, we know it to be a backward step, and an ideal of medicine which will be destructive to the best in medicine, and soul-destroying to its doctors, and one which we cannot conscientiously accept.

Our leaders, in this our most vital struggle, must let the authorities know, in no uncertain terms, that we cannot accept a service which we consider is contrary to the best ideals of medicine.

Yours, etc.,

D. W. H. Arnott.

143, Macquarie Street,
Sydney,
September 21, 1938.

CELLULAR RESPONSE TO INJURY.

Sir: We are always eager to accept the promise of a generalization. In his Bancroft Memorial Lecture, Charles H. Kellaway has gone far towards the realization of such a hope. We begin to see in his delightful and illuminating

address a unification in Nature's way of repairing injury that may come to all or any of the creatures that roam or squat in her domain. Whether in partaking of food or suffering harm, chemical or physical in origin, a series of reactions in consequence flow, which are shown to present similarities and single purpose in all. Of course we know that the immune body, an excited complex, has existed ever since protoplasm was first evolved. The resistance of tissues against and adaptation to the environment was a *sine qua non* for survival. Although a quality and a property inherent and inherited in every living cell, it is found in the most potent form in the wandering cells, the polymorphonuclear leucocytes in the liquid or semi-liquid fabric which binds and bathes them with reincarnating enforcement. This mobile tissue fabric may act as local police, which as a flying squad or in battalions may come. It is the call to resistance to injury and to stem invasion. Having paid my tribute to the lecturer in words which may convey little else, my purpose is to draw attention to him who first availed himself to the full of this natural aid to repair, as described in particular by Metchnikoff. Lister, in "An Address on a New Antiseptic Dressing", writes: "I believe I happened to be the first to direct attention to the antiseptic agency of living structures, and there is, perhaps, no one who attaches greater importance to it than I do." [a] He was also the first to recognize under the microscope and to draw cells of tissue origin, "wandering cells", as well as those from the blood (Metchnikoff's phagocytes) at sites of early inflammation. In another paper, prompted by a German title, *"Hemmungs-Nervensysten"*, he translates *"Hemmungs"* by the English word "inhibitory", being the first to use the word in a physiological sense. This paper may interest the Bancroft lecturer.[b] The modern surgeon, who, with a liberal use of the knife, cuts away damaged tissue, wastes that and the precious protective juices, and then calls for more by inflicting further injury. Lister would say that this was unnecessary and wrong. By a strange coincidence it will be found that the antiseptic dressing described is the double cyanide of mercury and zinc gauze in use (sparingly) today, but made according to a recipe which Lister, a week following its publication, withdrew as unsuitable. A new and distinctly superior dressing is then described; but the correction was never noted.[c] Thus it is that the inferior article alone is available.

I have tested both, and can appreciate the value of the amended recipe, to which I drew attention in the right quarter some nine years ago, but, I regret to say, without result. It is by the use of this proper gauze and closely observing the antiseptic principle that damaged tissues and saving juices may be preserved, and that damaged tissue may be a limb. I trust that the Bancroft lecturer will pardon me for intruding and hanging my tattered flag on a polished peg.

Yours, etc.,

A. C. F. Halford.

Wickham House,
Wickham Terrace,
Brisbane,
September 20, 1938.

References.

[a] Joseph Baron Lister: "The Collected Papers", Volume II, page 323.
[b] *Ibidem*, Volume I, page 87.
[c] *Ibidem*, Volume II, page 360.

The Royal Australasian College of Physicians.

EXAMINATION FOR MEMBERSHIP.

The following candidates for the examination for membership of the Royal Australasian College of Physicians held recently in Australia and New Zealand have satisfied the requirements of the Board of Censors:

Dr. J. F. Akeroyd, Dr. D. Y. Allen, Dr. Phyllis M. Anderson, Dr. C. G. Bayliss, Dr. J. S. Bothroyd, Dr. S. G. Bradfield, Dr. H. G. D. Breidahl, Dr. Terence Butler, Dr. R. R. Bye, Dr. Ian T. Cameron, Dr. M. E. Chinner, Dr. R. G. Champion de Crespigny, Dr. N. C. Cunningham, Dr. G. V. Davies, Dr. M. C. Davis, Dr. N. L. Dodd, Dr. C. Fortune, Dr. L. Holland, Dr. G. R. Kirk, Dr. E. Kirsner, Dr. M. McGeorge, Dr. J. B. McMiken, Dr. W. J. R. Mabin, Dr. I. S. Magarey, Dr. A. J. May, Dr. G. B. V. Murphy, Dr. K. F. O'Donnell, Dr. J. T. Paton, Dr. H. M. Rennie, Dr. C. W. Ross, Dr. L. E. Rothstadt, Dr. C. B. Sangster, Dr. B. A. Serjeant, Dr. B. T. Shallard, Dr. R. Southby, Dr. E. Spargo, Dr. F. M. Spencer, Dr. S. E. L. Stening, Dr. D. G. R. Vickery, Dr. Marion B. Wanliss, Dr. C. Yeatman.

Obituary.

FRANCIS WILLIAM RUTHERFORD SEYMOUR SHAW.

We regret to announce the death of Dr. Francis William Rutherford Seymour Shaw, which occurred on August 27, 1938, at Jundah, Queensland.

WILLIAM JOHN LONG.

We regret to announce the death of Dr. William John Long, which occurred on September 30, 1938, at Bendigo, Victoria.

GEORGE LAWSON KERR.

We regret to announce the death of Dr. George Lawson Kerr, which occurred on October 2, 1938, at Maroubra, New South Wales.

GEORGE CUMMING BYRNE.

We regret to announce the death of Dr. George Cumming Byrne, which occurred on October 2, 1938, at Strathfield, New South Wales.

NOTICE.

We have been asked to publish the following notice concerning the tenth International Congress of Military Medicine and Pharmacy.

The forthcoming International Congress (tenth) of Military Medicine and Pharmacy will be held in Washington from May 7 to 15, 1939. Invitations to participate have been sent to every country by the President of the United States of America, and already acceptances have been received from several countries. A full scientific and social programme has been arranged and will shortly be mailed to all the countries to which invitations were sent. A large registration is hoped for and every effort will be made by the committee in charge to make the congress an attractive one to those participating. General Charles R. Reynolds, the Surgeon-General of the United States Army, will be the president of the congress. Registration is open to all officers of the medical services of the army, navy, air and colonial services, national guard, territorial forces and public health service, whether active or reserve.

Colonel Harold W. Jones, of the Army Medical Corps, is secretary-general. The secretarial office is at the Army Medical Library, Washington, D.C.

Books Received.

THE HANDICAP OF DEAFNESS, by I. R. Ewing, M.Sc., and A. W. Ewing, M.A., Ph.D.; 1938. London: Longmans, Green and Company. Demy 8vo, pp. 337, with illustrations. Price: 12s. 6d. net.

A B C OF THE VITAMINS: A SURVEY IN CHARTS, by J. Gregory, M.S., with a foreword by W. H. Eddy; 1938. London: Baillière, Tindall and Cox. Royal 4to, pp. 106, with 56 charts. Price: 13s. 6d. net.

A SHORT PRACTICE OF SURGERY, by H. Bailey, F.R.C.S., and R. J. McN. Love, M.S., F.R.C.S.; Fourth Edition; 1938. London: H. K. Lewis and Company Limited. Demy 8vo, pp. 1004, with 818 illustrations, of which 109 are coloured. Price: 28s. net.

CHRONIC INTESTINAL TOXEMIA, WITH SPECIAL REFERENCE TO COLONIC THERAPY, by J. W. Wiltsie, A.B., M.D.; 1938. London: Baillière, Tindall and Cox. Crown 8vo, pp. 280, with illustrations. Price: 13s. 6d. net.

DISEASES OF THE EYE, by J. H. Parsons, C.B.E., D.Sc., F.R.C.S., F.R.S.; Ninth Edition; 1938. London: J. and A. Churchill Limited. Large crown 8vo, pp. 713, with 21 plates and 360 text figures. Price: 18s. net.

PSYCHE AND THE PHYSIOLOGISTS, AND OTHER ESSAYS ON SENSATION, by E. G. Dru Drury, M.D., B.S., D.P.H.; 1938. London: H. K. Lewis and Company Limited. Demy 8vo, pp. 112. Price: 5s. net.

CLINICAL ROENTGENOLOGY OF THE DIGESTIVE TRACT, by M. Feldman, M.D.; 1938. London: Baillière, Tindall and Cox. Demy 8vo, pp. 1030, with illustrations. Price: 45s. net.

Diary for the Month.

Oct. 11.—New South Wales Branch, B.M.A.: Organization and Science Committee.
Oct. 11.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
Oct. 14.—Queensland Branch, B.M.A.: Council.
Oct. 18.—New South Wales Branch, B.M.A.: Ethics Committee.
Oct. 19.—Western Australian Branch, B.M.A.: Branch.
Oct. 20.—New South Wales Branch, B.M.A.: Clinical Meeting.
Oct. 25.—New South Wales Branch, B.M.A.: Medical Politics Committee.
Oct. 25.—Queensland Branch, B.M.A.: Council.
Oct. 26.—Victorian Branch, B.M.A.: Council.
Oct. 27.—South Australian Branch, B.M.A.: Branch.
Oct. 27.—New South Wales Branch, B.M.A.: Branch.
Nov. 1.—New South Wales Branch, B.M.A.: Organization and Science Committee.
Nov. 2.—Western Australian Branch, B.M.A.: Council.
Nov. 3.—South Australian Branch, B.M.A.: Council.
Nov. 4.—Queensland Branch, B.M.A.: Branch.
Nov. 8.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
Nov. 9.—Victorian Branch, B.M.A.: Branch.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser", pages xxii to xxiv.

Commonwealth Department of Health: Medical Officer.

Children's Hospital (Incorporated), Perth, Western Australia: Junior Resident Medical Officers.

Fremantle Hospital, Fremantle, Western Australia: Junior Resident Medical Officer.

Mater Misericordiæ Hospital, North Sydney, New South Wales: Honorary Physician.

Royal Alexandra Hospital for Children, Sydney, New South Wales: Honorary Physician.

Royal Melbourne Hospital, Melbourne, Victoria: Senior Resident Medical Officers, Resident Clinical Pathologist.

Sydney Hospital, Sydney, New South Wales: Senior Resident Medical Officer.

The Victorian Eye and Ear Hospital, Melbourne, Victoria: Resident Surgeons.

Medical Appointments: Important Notice.

Medical practitioners are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCHES.	APPOINTMENTS.
New South Wales: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phœnix Mutual Provident Society.
Victorian: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
Queensland: Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17.	Brisbane Associate Friendly Societies' Medical Institute. Proserpine District Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.
South Australian: Secretary, 178, North Terrace, Adelaide.	All Lodge appointments in South Australia. All contract Practice Appointments in South Australia.
Western Australian: Honorary Secretary, 205, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.

Editorial Notices.

Manuscripts forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to The Medical Journal of Australia alone, unless the contrary be stated.

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